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PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY

ESTABLISHED IN 1872

Vol. LXXV. No. 15 NEW YORK AND CHICAGO, OCTOBER 12, 1922 { Per annum, $4.00 { Single Copy, 10 Cents

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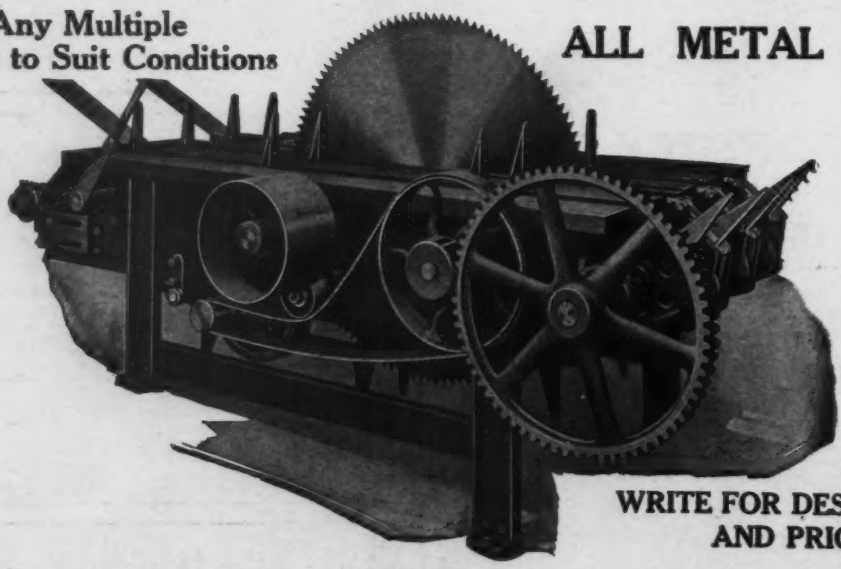
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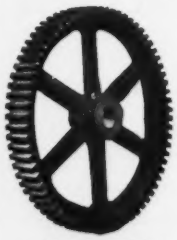

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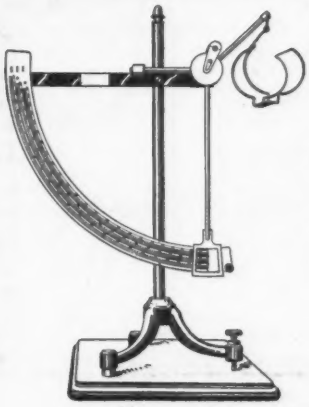

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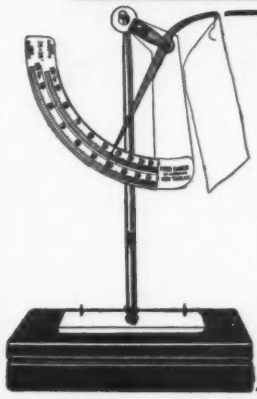

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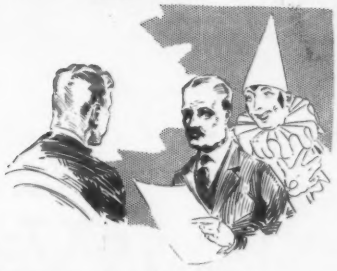

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That is why even experts are misled when they rely upon tearing tests to gauge paper quality.
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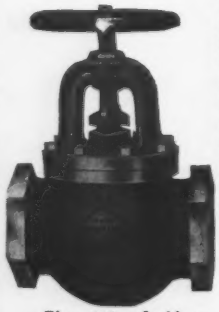

Fig. 141, Jenkins Standard Iron Body Globe Valve, screwed.

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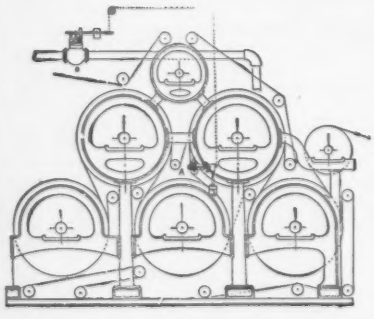

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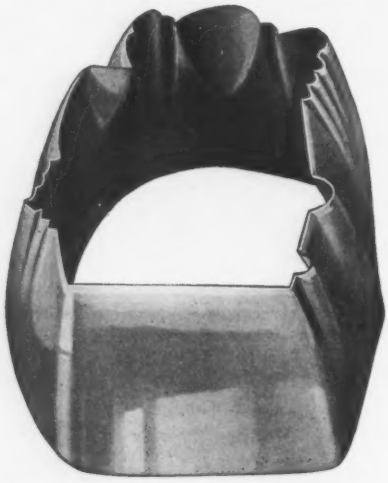

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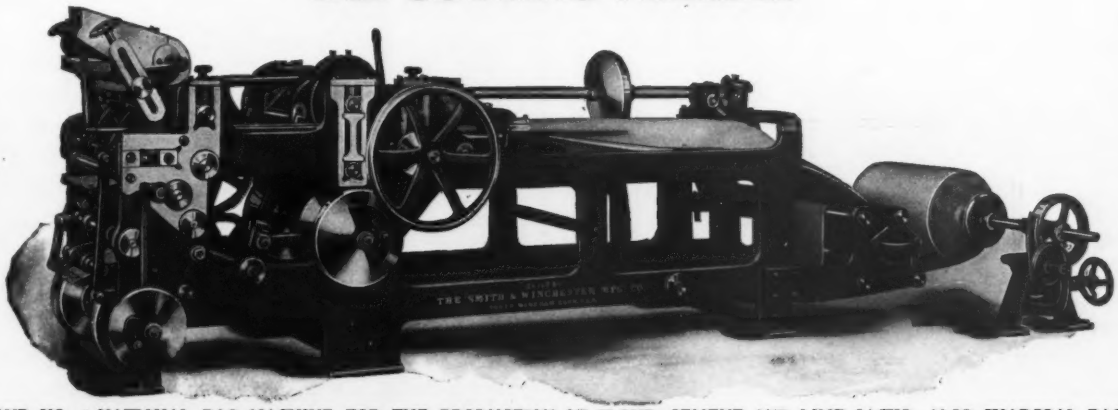

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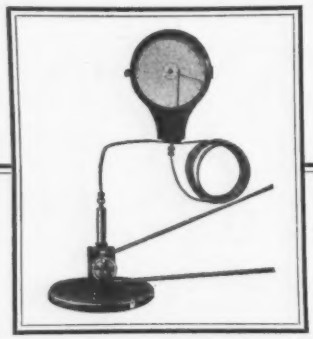

Bristol Instruments

And their Uses in the Sulphite Process

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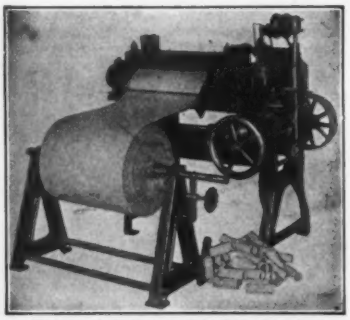
Automatic Tube Machines

For Making Tubes for Toilet Paper Rolls, Paper Towel Rolls



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PERFORATED METAL SCREENS
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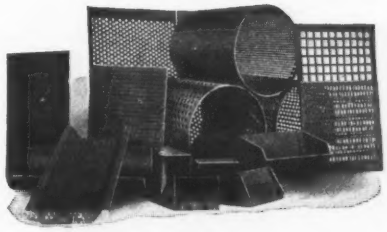

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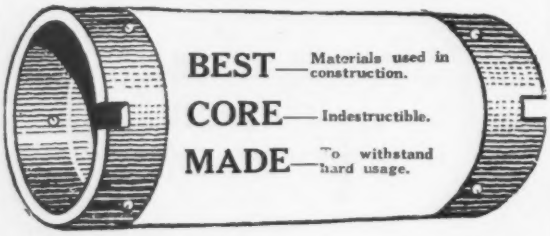

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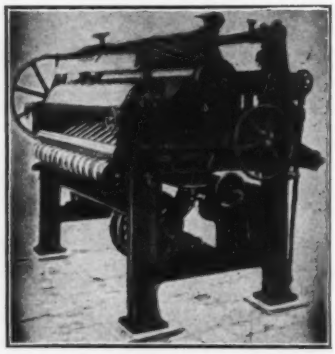

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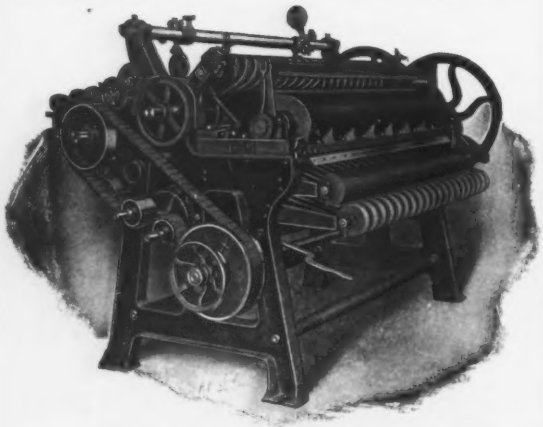

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Weight
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Takes up less space than a typewriter.

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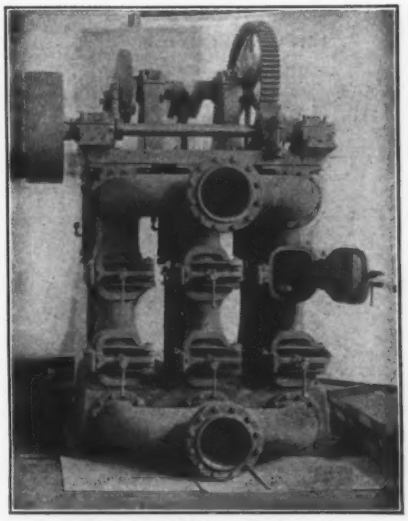

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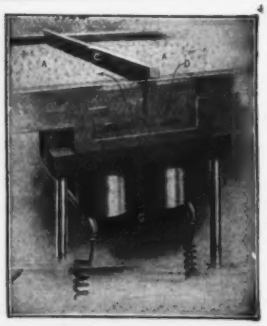

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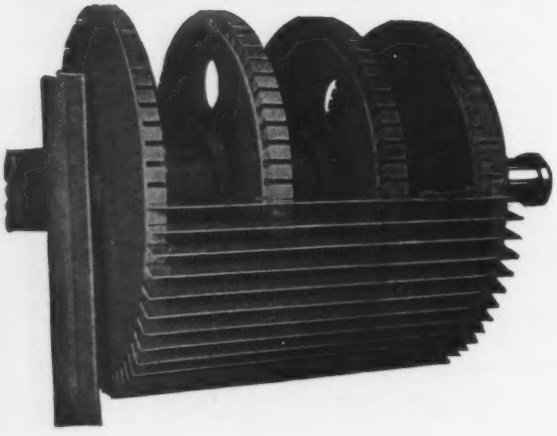

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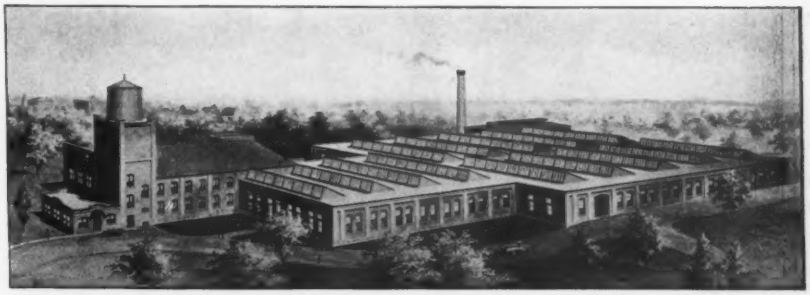

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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY

FIFTY-FIRST YEAR

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TECHNICAL ASSOCIATION MEETS AT DETROIT

Waste in the Industry, Drying of Paper and Paper Testing Are Discussed at Length by Representative Men of the Paper and Pulp Industry of the United States and Canada at the Annual Fall Meeting Monday and Tuesday of This Week at the Hotel Wolverine—Plans Formulate to Continue Serious Work Along These Lines—Those Present at the Meeting.

DETROIT, Mich, October 12, 1922.—Serious and helpful discussions of topics of vital and timely interest to those engaged in the technical side of the paper business occupied the attention of an unusually good attendance of the members of the Technical Association of the Pulp and Paper Industry at their fall meeting at the Hotel Wolverine on Monday and Tuesday of this week. George E. Williamson briefly outlined the purpose of the meeting and immediately began the business program. This included reports of the various standing committees and it was gratifying to observe how with hardly a single exception these either by the chairman individually or through the secretary reported some tangible progress.

Encouraging Reports

These reports comprised the following: Sulphite Pulp, H. A. Hayward, Newton Falls Paper Company, Newton Falls, N. Y.; Soda Pulp, George K. Spence, New York and Pennsylvania Company, Johnsbury, Pa.; Sulphate Pulp; Ground Wood; Vocational Training, R. S. Hatch, Hammersley Manufacturing Company, Garfield, N. J.; Heat Light and Power, Howard Taylor, Management Engineering and Development Company, Dayton, Ohio; Waste, Robert B. Wolf, Robert B. Wolf Company, New York; Paper Testing, F. A. Curtis, Bureau of Standards, Washington, D. C.; Paper Machine Felts, George H. Harvey, Gardner-Harvey Paper Company, Middletown, Ohio, and Dyestuffs, Ross Campbell Proctor & Gamble Company, Holyoke, Mass.

Work of Various Committees

Secretary MacNaughton stated that under "Service to Members" Grellet Collins of the Dill & Collins Company, Philadelphia, had been collecting some valuable data on the work of the beaters and stated that while a general report would be made to the members on this work those who contributed to the data would be furnished with a complete report and suggested that such contributions would still be welcomed from those who had not already made them.

The secretary announced that J. O. Ross of the Ross Engineering Corporation of New York, had been appointed chairman of the committee on membership and plans were already under way for effective work by this committee. He reported that twenty-nine members had been added since the meeting in April, including a number of former members who had returned to the association.

Mr. MacNaughton reported the formation of a committee on Fourdrinier Wires which he said had been formed at the request of the manufacturers of Fourdrinier Wires and of which he had been appointed secretary. This committee had its first meeting only several months ago, but in a preliminary way has already started work which cannot fail to aid in the more satisfactory use of paper makers wires. The secretary also announced a new committee on cellulose of which W. E. Byron Baker, of the York Haven Paper Company of York Haven, Pa., was made chairman.

Vocational Education

Mr. Hatch's report on Vocational Education especially caused long and interesting discussion. Among other things he mentioned that the widespread interest in the text books had already caused provisions to be made to have Vols. I and II translated into French. General discussion by R. S. Kellogg, secretary of the Vocational Educational Committee B. T. McBain and E. P. Gleason of the Nekoosa-Edwards Paper Company, J. N. Stephenson, editor of the *Pulp and Paper Magazine of Canada*. President Williamson and others brought out the facts that correspondence courses based on the text books had already been started by the Industrial and Arts Institute of Gardenvale, Canada, and the University of Wisconsin and that classes were doing excellent work with the text books at the plants among others of the Nekoosa-Edwards Paper Company, the Champion Fibre Com-

PICTURE TAKEN AT THE ANNUAL FALL MEETING OF THE TECHNICAL ASSOCIATION OF THE

pany and the Strathmore Paper Company. Mr. Hatch, however, stated that while Canada had fully contributed its share of the expense the United States was still considerably behind and urged the members to assist as much as possible in making up the amount needed to complete the financing of the work. Mr. Stephenson stated that although it had been expected to issue Vol. IV at this time unavoidable delays made it impossible to bring it out until some months later. Ed. B. Wardle, chief engineer of the Laurentide Company, Limited, of Grand Mere, Canada, moved a vote of commendation for the work of the committee and confidence in its work which was unanimously passed.

Technical Section in Paper Trade Journal

At the conclusion of the meeting President Williamson stated that the arrangement with the PAPER TRADE JOURNAL through which the Technical Section of the association was being printed each week was working out most satisfactorily.

Amendments to the Constitution

In order to change several inconsistencies in the present constitution and bring it up to date, the following changes were recommended by the Executive Committee at the annual meeting last April:

ARTICLE III, Section 8, now reads, "Election of Members: Four affirmative votes out of five members of the Executive Committee are necessary to election."

As changed it will read, "Election of Members: Six affirmative votes out of seven members of the Executive Committee are necessary to election."

ARTICLE III, Section 11, now reads, "The annual dues for membership in each grade shall be as follows: Members $25; Corporate Members $100; Associate Members $25; Juniors $5 for the first five years of his membership and thereafter the same as for an Associate Member."

As changed it will read, "The annual dues for membership in each grade shall be as follows: Members $15; Corporate Numbers $100; Associate Members $15; Juniors $5 for the first five years of membership and thereafter the same as for an Associate Member."

ARTICLE VI, Amendments, now reads, "Any member may propose an amendment by addressing the secretary. At the first regular meeting thereafter the subject shall be discussed and, if worthy, notice to vote on same shall be posted until the next regular meeting and written copy of the notice shall be sent to each member. The proposed amendment shall then be discussed in open meeting and can be passed by a two-thirds vote of all the members of the association as a result of a letter ballot."

As changed it will read, "Any member may propose an amendment by addressing the secretary. At the first regular meeting thereafter the subject shall be discussed and, if worthy, a written copy of notice to vote on the same at the next regular meeting shall be sent to each member. The proposed amendment shall then be discussed in open meeting and can be passed by a two-thirds vote by ballot of the members present and voting."

The following are a few recommended changes in the By-Laws.

ARTICLE IV, of Meetings, Section 1, now reads, "The meetings shall be held three times a year, in the spring, fall and winter."

As changed it will read, "Two meetings shall be held during the year: the fall meeting and the annual meeting."

It is further recommended to make the By-Laws consistent in that the word or words "spring" and "spring meeting" be omitted in Article II, Section 3; Article III, Section 4; and Article IV, Section 3.

ARTICLE V of the By-Laws, of Delegates, now reads, "The President of the Association shall be the representative of the association on the Executive Council of the American Paper and Pulp Association and the two senior members of the Executive Committee of the Technical Association shall be members of the Executive Council of the American Paper and Pulp Association."

As changed it will read, "The president of the association shall be the representative of the association on the Executive Committee of the American Paper and Pulp Association."

The forgoing changes were approved by the meeting.

Waste in the Industry

At 2:30 o'clock the association assembled to consider the matter of waste in the industry. The meeting was in charge of Robert B. Wolf chairman and G. D. Bearce, vice-chairman. The main subject was divided as follows: Fiber Loss Through Mill Effluent and Barking Drum Waste, including Report of Bark Pressing Tests and Evaporative Efficiency of Bark.

As a result of the discussion it was voted that it be the sense of the meeting on Waste that in the consideration of pulp the air dried basis heretofore used be discontinued and the bone dried basis be used hereafter, and that this action of the meeting be referred to the association.

During the meeting R. S. Kellogg, called attention to the fact

PULP AND PAPER INDUSTRY, WOLVERINE HOTEL, DETROIT, MICH., OCT. 9-10, 1922

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that in the budget now being made up for the support of investigation at the Forest Products Laboratory at Madison, Wis., of work along the lines being discussed at the meeting there was a provision for an appropriation of $10,000 and he urged all present to do whatever they could immediately to see that this appropriation was made.

Sectional Meetings on Tuesday

The association on Tuesday morning divided into sectional meetings, one under the chairmanship of R. S. Hatch, substituting for Fred C. Clark, who could not be present, considering the subject of Paper Drying and the other under direction of F. A. Curtis taking up the subject of Paper Testing.

At the sectional meeting on Paper Drying the following committee was appointed to carry out some of the tests recommended during the course of the discussion: E. P. Gleason of the Nekoosa-Edwards Paper Company, Ralph T. Bosworth of the Crocker, McElwain Company and Chemical Paper Manufacturing Company, George H. Harvey of the Gardner, Harvey Paper Company, S. B. Jones of the Pejepscot Paper Company, R. S. Hatch of the Hammersley Manufacturing Company and Mr. Sperling of the Hammermill Paper Company.

The discussion at all of the special meetings was exhaustive and very interesting and will be printed later in greater detail in the Technical Section of the PAPER TRADE JOURNAL.

The Banquet

George E. Williamson, the president of the association presided at the banquet on Monday evening. Seated at the guest table were Judge Arthur J. Tuttle, of the Eastern District of Michigan, Prof. A. H. White of the Chemical Engineering Department of the University of Michigan; Henry P. Carruth, of the Mead Pulp and Paper Company; Henry E. Fletcher, of the Fletcher Paper Company; Raymond S. Hatch of the Hammersly Manufacturing Company; Robert B. Wolf, of the Robert B. Wolf Company; R. S. Kellogg, secretary of the News Print Service Bureau, J. N. Stephenson, editor of the *Pulp and Paper Magazine of Canada* and William G. MacNaughton, secretary of the Technical Association of the Pulp and Paper Industry.

Judge Tuttle made an earnest appeal for greater interest on the part of thinking men in the vital problems of the day. He stated that because of observations in his own court he was convinced that intelligent men must awaken to an appreciation of the subtle wave of thought that is sweeping the country among some classes regarding the right to property or the present order of things might be superceeded by radical ideas. While the present pronounced tendency increasingly to seek relief by Federal laws for every evil and abuse was, he said, an inspiring manifestation of the confidence of the people in the National Government still he was concerned as to where this was leading. The Volstead act among numerous other matters of late was so greatly burdening the Federal machinery that, he pointed out, there was danger of its being not able to function as it should. He urged his hearers to stand for co-operation between the State and National Governments in looking after law breakers of all descriptions.

Prof. A. H. White of the Chemical Engineering Department of the University of Michigan gave an address on "Training Men for Industry" that was listened to intently throughout. He stated that while the universities could not be expected to train men competently for the industries they could with the right co-operation at least give to young men a flavor of certain industries, as it were, and head them in the right direction. He suggested that the paper industry for instance might provide the expenses of a professor at one or several institutions to instruct the most apt men in the science of the business for a year or two after obtaining their undergraduate degrees. He believed the mills providing for such professorships, which would not be expensive, would be repaid manifold in the class of men they would be able to obtain.

Plant Visitations

Tuesday afternoon groups were made up to visit the plants of the Detroit Sulphite Pulp and Paper Company and the Port Huron Sulphite and Paper Company while some of the members devoted the afternoon to visiting the great Ford automobile plants, one of which alone employs 49,000 men and which have been among the most important factors in causing Detroit in a brief time to take rank as the fourth city in the country. Later in the afternoon such of the members as could spare the time went to Ann Arbor to visit the Chemical Engineering Department of the University of Michigan. In the evening the members making this trip were entertained at dinner by the heads of the Chemical Engineering Department of the university.

Those Who Attended

The following members and guests were present at the fall meeting of the Technical Association:

J. E. Alexander, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

G. J. Ambruster, Fraser Company, Ltd., Edmunston, N. B.

A. L. Allen, General Electric Company, Pittsfield, Mass.

A. E. Armstrong, Armstrong Machine Works, Three Rivers, Wis.

George D. Bearce, News Print Service Bureau, New York.

A. J. Baldwin, Newton Falls Paper Company, Newton Falls, N. Y.

H. J. Berger, Editor PAPER TRADE JOURNAL, New York.

O. L. Berger, G. D. Jansen Company, New York.

C. A. Brunner, General Electric Company, Chicago.

Ralph T. Bosworth, Crocker-McElwain Company and Chemical Paper Manufacturing Company, Holyoke, Mass.

William M. Bovard, Package Paper and Supply Corp., Springfield, Mass.

L. M. Booth, Booth Chemical Company, Elizabeth, N. Y.

Miss L. C. Barrett, National Secretary American Pulp and Paper Mill Superintendents' Association, Kalamazoo, Mich.

W. E. Brown, Pejepscot Paper Company, Brunswick, Maine.

L. C. H. Beighey, Hammermill Paper Company, Erie, Pa.

C. A. Booth, Buffalo Forging Company, Buffalo, N. Y.

J. A. Bowers, Hammermill Paper Company, Erie, Pa.

N. M. Brisbois, Southern Paper Company, Kalamazoo, Mich.

W. W. Cronkhite, General Electric Company, Schenectady, N. Y.

H. P. Carruth, Mead Pulp and Paper Company, Chillicothe, Ohio.

Ross Campbell, Proctor & Gamble Company, Holyoke, Mass.

J. P. Cooney, Peninsular Paper Company.

E. T. Coughlin, Allied Paper Company, Monarch Division, Kalamazoo, Mich.

F. A. Curtis, Bureau of Standards, Washington, D. C.

Mrs. D. J. Dicken, Ind. Paper Company, Chicago, Ill.

T. W. Dunn, Detroit, Mich.

R. H. De Mott, S. F. K. Industries, New York.

W. F. Dewey, B. D. Rising Paper Company, Housatonic, Mass.

G. R. Ellis, Elect. Bleaching Gas, Chicago, Ill.

Harry Fletcher, Fletcher Paper Company, Alpena, Mich.

H. S. Gravott, the Western Union Telegraph Company, New York City.

O. P. Gephart, Miami Paper Company, West Carrollton, Ohio.

Israel Gordon, Lee Paper Company, Vicksburg, Mich.

E. P. Gleason, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

H. W. Gippert, S. & P. Company, Detroit, Mich.

Earnest Gschwender, Detroit Sulphite and Paper Company, Detriot, Mich.

H. W. Guettler, Fiber Making Processes, Inc., Tower Building, Chicago, Ill.

Charles M. Howell, Scott Paper Company, Chester, Pa.

C. L. Higgins, Finch, Pruyn & Co., Glens Falls, N. Y.

R. S. Hatch, Hamersley Manufacturing Company, Garfield, N. J.

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Robert Herron, Chillicothe Paper Company, Chillicothe, Ohio.
A. R. Harvey, Gardner-Harvey Paper Company, Middletown, Ohio.
G. H. Harvey, Gardner-Harvey Paper Company, Middletown, Ohio.
R. Horton, Ford Motor Car Company, Detroit, Mich.
Carl Jansen, Detroit, Mich.
S. B. Jones, Pejebscot Paper Company, Brunswick, Maine.
H. O. Keay, Laurentide Company, Ltd., Grand Mere, Quebec.
C. H. Kent, Paper Makers Chemical Company, Holyoke, Mass.
E. W. Kiefer, Port Huron Sulphite and Paper Company, Port Huron, Mich.
W. A. Kelly, Northern Paper Mills, Green Bay, Wis.
R. S. Kellogg, News Print Service Bureau, New York.
F. P. Klund, Hammermill Paper Company, Erie, Pa.
C. E. Kinney, Hercules Powder Company, Wilmington, Del.
Miss H. Kiely, American Writing Paper Company, Holyoke, Mass.
R. W. Leeper, Management Engineering and Development Company, Dayton, Ohio.
Frank D. Libby, Vegetable Parchment Company, Kalamazoo, Mich.
H. R. Masters, Wolf Brothers Company, Elgin, Ill.
Harry Liebeck, Scott Paper Company, Chester, Pa.
B. T. McBain, Director of Manufacturing, Nekoosa-Edwards Paper Company, Port Edwards, Wis.
Miss E. McGrath, Booth Chemical Company, Elizabeth, N. Y.
W. H. Millspaugh, Sandusky Foundry and Machinery Company, Sandusky, Ohio.
F. J. Morrison, Newton Falls Paper Company, New York.
W. L. Nixon, Chemical Paper Manufacturing Company, Holyoke, Mass.
R. H. Norris, Dennison Manufacturing Company, Framingham, Mass.
J. J. O'Connor, Meade Pulp and Paper Company, Chillicothe, Ohio.
H. F. Obermanns, Hammermill Paper Company, Erie, Pa.
H. L. Peckham, Hammermill Paper Company, Erie, Pa.
R. W. Pryor, Jr., New York.
L. J. Parant, St. Croix Paper Company, Woodland, Maine.
John D. Rue, Forest Products Laboratory, Madison, Wis.
H. S. Rumsey, Chicago, Ill.
G. K. Spence, New York and Pennsylvania Company, Johnsonburg, Pa.
B. S. Summers, Port Huron Sulphite and Paper Company, Port Huron, Mich.
J. N. Stephenson, *Pulp and Paper Magazine of Canada*, Montreal, Ontario.
E. E. Saunders, Inland Empire Paper Company, Melwood, Wash.
Thomas H. Savery, Jr., Nash Engineering Company, Bird Machinery Company, Chicago, Ill.
H. Z. Schniewind, Foreign Paper Mills, New York City.
J. H. Slater, Escanaba Paper Company, Escanaba, Mich.
A. F. Smith, Cincinnati, Ohio.
J. V. Slade, Dorr Company, New York.
H. S. Taylor, Management Engineering and Development Company, Dayton, Ohio.
E. C. Tucker, Crocker-McElwain Company, Holyoke, Mass.
P. Y. Tumy, General Electric Company, Grand Rapids, Mich.
E. J. Turner, Western Paper Makers' Chemical Company, Kalamazoo, Mich.
W. F. Thiele, Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis.
John Traquair, Meade Pulp and Paper Company, Chillicothe, Ohio.
G. E. Williamson, Strathmore Paper Company, Mittineague, Mass.
E. B. Wardle, Laurentide Company, Ltd., Grand Mere, Quebec.
C. C. Walden, *United States Paper Maker*, New York.
J. O. Woodsone, Utica, N. Y.
R. B. Wolf, R. B. Wolf Company, New York.
Morris C. Walsh, Mellon Institute, Pittsburgh, Pa.
S. D. Wells, Forest Products Laboratory, Madison, Wis
J. J. Wall, General Electric Company, Milwaukee, Wis
D. S. Wegg, Chicago.
L. M. Yoerg, Carew Manufacturing Company, South Hadley Falls, Mass.
Paul Zilske, Detroit Sulphite and Paper Company, Detroit, Mich.

Rain Extinguishes Huge Forest Fires

[FROM OUR REGULAR CORRESPONDENT.]

BANGOR, Me., October 9, 1922.—Rain and snow on Friday and Saturday of last week ended big forest fires that destroyed thousands of dollars worth of valuable pulpwood in the Moosehead lake region of the state, the rain bringing much relief to timberland owners who were frankly worried about the situation. The entire state was visited by a smoky haze from the fires, villages were threatened, wild animals driven before the flames and hundreds of woodsmen employed by the big paper companies were diverted from their duties to fight the fires.

Gov. Baxter issued a proclamation suspending the open time on big game and forbidding all persons from hunting in the woods until the ban was lifted. The governor's stand was openly commended by Fred E. Gilbert, vice-president of the Great Northern Paper Company of this city. Mr. Gilbert stated in a letter to the governor that it is about time for the timberland owners of Maine to restrict in some way the hunting and fishing privileges of persons who now roam through the wildlands owned by paper companies and other corporations, and who fail to take proper precautions to avoid fires. These persons often toss lighted cigarettes into dry underbrush or neglect to extinguish their camp fires, thereby starting forest fires which result in a great loss to the land owners.

Mr. Gilbert happened to be in the St. John pond and Seboomook region when the forest fires were breaking out, and in his estimation, all but one in these sections were undoubtedly started by campers. At one time 500 men were at work fighting fire on Great Northern lands.

Surface Coated and Cigarette Papers

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 11, 1922.—The Tariff Commission has just issued a report entitled "Surface-coated, Photographic, Cigarette and Miscellaneous Papers," in the preparation of which the commission had the services of Constant Southworth, special expert of its staff, and others. This report is the first of a series of reports which the commission hopes to publish dealing with all the different kinds of paper represented in Schedule M of the tariff law of 1913.

The report in question follows in structure the general outline of all the tariff information surveys prepared by the commission, the aim of which is to present to Congress in detail all the facts which will serve as a guide in framing scientific tariff legislation. These facts relate to description of the different kinds of paper involved, raw materials used, processes of manufacture, amounts produced, imported and exported; prices, tariff history, nature of competition with foreign countries, customs decisions, etc. The kinds of paper considered in the report just published are surface-coated, waxed, gummed, decalcomania and decorated paper; cloth-lined or reinforced paper; photographic and blue print paper; cigarette paper; pâpier maché; paper not specifically provided for in the tariff act of 1913; miscellaneous manufactures of paper, such as bags and boxes; and paper stock.

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NATIONAL U.S.A. DYES

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[FROM OUR REGULAR CORRESPONDENT.]

PHILADELPHIA, October 10, 1922.—With not the slightest semblance to a boom, and entirely free from any hectic manisfestations the week's business in the Philadelphia trade in fine and coarse papers alike moved forward in a most marked manner, in some cases almost jumping. In none of the establishments of the leading distributors was there heard any less strong expression in diagnosing trade conditions than "fine," "excellent," or "rushing." This prosperous condition of the industry was attended by nothing of a phenomenal or unlooked-for character; the result is simply the logical developement from existing circumstances. All uncertainty as to the future seems to have been removed from manufacturing and mercantile enterprises by the settlement of the strike and the enactment of a tariff bill, with the result that firmness in placing business has supplanted the hesitation of the last month or two. The paper trade has, in consequence, not only more orders but, what is most important, orders of larger average size. The old evils of small orders and the retail distribution of paper at wholesale prices seem largely to have been eliminated.

Confidence Aids in Business Revival

To this brightened view of the future even more than to the stable but yet upward trend of prices does the trade attribute the excellent business enjoyed in the closing days of September and particularly during the opening week of October. Arguments presented by paper salesmen, that delays in ordering probably meant higher prices and possibly inability to get goods when required, had been received in the spirit in which they were given but the response in orders was not forthcoming; now, without appreciable alteration of fundamental conditions the orders are to be had almost without the asking. It is no longer a buyer's market although it is still far removed from one dominated entirely by the seller. The latter is able, however, to give his price and then to say no to an offer of an order at a reduction. This condition of affairs applies to all of the Philadelphia distributors although their sales representatives visiting the trade at nearby points, report numerous instances of price cutting on certain lines of bonds and ledgers of which out of town distributors seem to have an over supply. These, however, are only isolated instances and, broadly speaking it may be said that prices are steady and firmly maintained. All the distributors expect mill advances by the middle of the month or perhaps a little later and therefore only a few new price lists were issued as of October 1. Most of the houses, however, will issue such lists in the mid-month and will then absorb whatever increases are made until the issuance of a new list November 1 or 15. An advance in the higher priced bonds, which thus far have not moved upward in the same ratio as the sulphite, is regarded as imminent.

Paper Stock Firm

In the paper stock market values are firmly held for all grades, particularly for the cheaper ones, and outside quotations now maintain. There is a fairly strong mill inquiry for the entire line and a great demand for the container stock. Rag stock is moving along steadily but without special feature.

D. L. Ward Co. to Open Envelope Division

Following the announcement made in these columns last week of the taking over by the United States Envelope Company, of the Monarch plant in this city, established some time ago by the D. L. Ward Company but afterwards turned over to the Monarch Company, comes the news that the D. L. Ward Company will reopen an envelope department for the sale of a complete line of envelopes of varied manufacture. The department will be in charge of Norman H. Jenkins who has had many years of experience in the envelope business and for a long time was connected with the United States Envelope Company. Walter Gerhab, formerly on the Monarch Envelope Company sales organization has joined the Ward forces while Joseph O'Toole has gone with the Philip Griffith Envelope Company.

Whitaker Paper Co. In New Quarters

There was opened during the week the new offices and warehouse of the Whitaker Paper Company, at 26 No. 5th street, foreshadowed in these columns, thereby making a reality of a matter which has been the subject of prophecy in paper distributing circles in this city for years. The new warehouse will be used for sales storage and executive purposes as a branch of the Baltimore division of the Whitaker Paper Company and immediately will be in charge of Halsey E. Ramsen, for eleven years connected with the Whitaker firm, first as the assistant manager in the Indianapolis office and as one of the leading salesmen in the Baltimore branch at Gilford avenue and Saratoga street. The branch occupies an entire four-story-and-basement building with a capacity of 9,000 square feet. On the first floor will be the executive and sales offices of the manager and the following salesmen, Louis Megargee, who for the past year has been connected with the firm, Victor Arndt, and Frederick Castator, formerly connected with the Garret-Buchanan Company and the Saxe Paper Company. The rest of the building will be devoted to the warehouse stock. James French, formerly with the D. L. Ward Company, is superintendent of the warehouse. There will be carried in the new headquarters a complete line of fine papers and the brands of the American Writing Company better known as the Eagle A will be specialized. The same papers as carried in the 16 other branches will be featured in the local distribution of papers. They will include book papers, post card stock, index bristol and the famous Dae Skin die wiping papers in addition to ledgers and bonds and general writings. All the Whitaker brands also will be stocked. The territory of the Philadelphia branch includes Pennsylvania, parts of New Jersey, and Delaware, as far south as Wilmington.

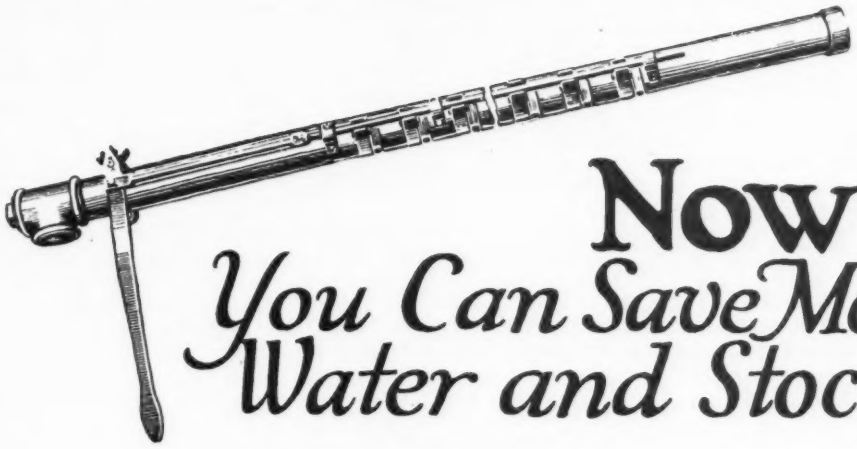
Joins American Writing Paper Co. Branch

To the Philadelphia branch of the American Writing Paper Company in the Bourse there was added during the week F. D. Rotellini, who will serve as an advisor to the printing trade under the American Writing Paper Company's department of general service. Mr. Rotellini has special qualification not only as an advisor on paper but as a practical printer. He was for many years foreman of the printing department of the Myers Manufacturing Company, Camden, N. J., which afterwards became the Parkside Press, and subsequently was in charge of the private printing plant of the Hotel Traymore, Atlantic City. Later he was on the sales force of the Franklin Printing Company of this city.

Charles Baker Back in Camden

Charles Baker, for some time foreign representative of the McAndrews & Forbes Company, of Camden, N. J., is again making his headquarters at the Camden plant after spending considerable time in China and other oriental countries. A large assortment of high grade papeteries is being featured in the wholesale stationery department of the Garret Buchanan Company for the holiday trade. Over 200 numbers of specially packed, high-grade, linen finished papers are being placed on the market in attractive boxes under the brands of Sinex Lawn, Admiration, Presentation and other

(*Continued on page 24*)



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You Can Save More Water and Stock

Just pull the lever and the shower pipe cleans itself.

The obvious way to prevent waste of stock is to decrease the amount of white water discharging from the mill, and the way to accomplish this is to use white water wherever possible. In the past white water has been used at the mixing box and, for the most part, in the beaters. But not until the invention of the

BIRD SELF-CLEANING SHOWER PIPE

has it been possible to successfully use white water for showering purposes.

It is a practical, self-cleaning shower pipe with which white water can safely be used. All obstacles to the continuous discharge of white water have been overcome.

We would like to have you try out one of these shower pipes in your mill. Write us for the details.

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Western Representative
T. H. Savery, Jr., 1718 Republic Bldg. Chicago, Ill.

Canadian Builders of Bird Machinery
Canadian Ingersoll-Rand Co., Ltd.
260 St. James Street, Montreal, Canada

88-243

BIRD self cleaning SHOWER PIPE

XUM

PHILADELPHIA TRADE HUMS THOUGH NO BOOM IS APPARENT

(*Continued from page 22*)

special labels. The department is under the managership of W. Harry Goebel, who for the past week has been introducing a new holiday line in the Harrisburg market.

Establish Advertising Department and Printers' Service

The Wilcox, Walter, Furlong Paper Company, 231 Chestnut street, is now stocking Tuscan cover, made by the Peninsular Paper Company in ten colors besides white. The stock sizes are 20x26—65 and 23x33—95 in single and double weights. The company has just established an advertising department and a special printer's service for its entire line and the new department will be under the care of Charles Sheble, formerly of the sales and advertising forces of the D. L. Ward Company. The object of the new department is to exploit the various mill brands and to compile and distribute samples to the printing, stationery and other fine paper converters. Mervin Seiffert, salesman for the firm, will be married on October 9, to Miss Margaret D. Millspaugh of Haddonfield, N. J. and after a three week's tour of New England will be at home in Philadelphia at 4422 Spruce street.

Paper Stock Dealers Express Optimism

The Philadelphia Paper Stock Dealers' Association resumed its activities for the season at a meeting on Thursday night of last week at 1827 Arch street, President Evan G. Badger presiding. Since there was no formal business pending the meeting resolved itself into a discussion of trade conditions and there was unanimity of opinion that those existing at present were splendid and that the prospects for the future were even more so. President Badger extended an invitation for a social meeting with an old fashioned sauerkraut luncheon to be held early next month in his home, 1234 S. Broad street.

Charles Beck Co. Stocks Letter Finish Bond

The Charles Beck Company, added to its stock during the week the new finish of the well known Certificate Bond, called the letter finish. It will be carried in white only in 17x22—20; 17x22—24; 22x34—40; 22x34—48. It will be sold at the same price as Certificate Bond.

A. E. Whiting Returns from Holyoke Trip

President Allen E. Whiting of the Whiting-Patterson Company returned during the week from a trip to the mills in the Holyoke district and sales manager John W. Harraux left on a brief vacation. Upon his return, President Whiting learned of a misfortune which had befallen his son, John, an enthusiastic horseman. In the steeplechase the mount refused to jump and young Whiting was thrown over his head, breaking both arms.

T. F. Kennedy Visits New England Mills

Thomas F. Kennedy vice-president of the Simon Walter Paper Company, Inc., 5th street above Cherry, leaves this week for an extensive trip through Connecticut and Massachusetts where he plans to spend much time in the various mills in that district.

Paper Trade Journal Read Extensively

Just a little sidelight on the wide circulation of the PAPER TRADE JOURNAL and the interest with which it is read was furnished during the week to President Norbert A. Considine of the Paper House of Pennsylvania. Recently in these columns reference was made to an article in the JOURNAL of this concern and quotations made from an article in it entitled, "The Paper House is Not a Bank." Many requests for copies of the article have come to Mr. Considine as a result of this notice, the most distant being from the Commercial Trading Company, of San Francisco, which wrote that it had read the JOURNAL article, was much interested and desired copies of the bulletin.

Printer's Wastes Sales Increase 50 Per Cent in Month

Statistics for September on the operations of the Waste Paper Division of the Typothetæ of Philadelphia show that with but a slight increase in membership over August, sales of printer's wastes increased just a trifle less than 50 per cent in terms of dollars and cents.

Trade Associations Suspend Business over Convention Week

The fine paper division of the Philadelphia Paper Trade Association met last Thursday noon at the Bourse, but because of the coming fall meetings in Chicago of the two National Associations, action on some pending questions was postponed. A meeting also had been called of the Trade Relations Committee of the Paper Trade Association, George W. Ward, chairman, and of the Typothetæ of Philadelphia, Wm. Sharpless, chairman, but these were postponed also until later. As a matter of fact there was actually no business to transact because, in the words of both chairmen, relationships between the printing and paper industries as a result of the recently adopted peace pact are now entirely harmonious and more pleasant than at any time in trade annals. The proposed meeting had been called merely for good fellowship purposes.

Esparto Papers, Inc. Awaiting Charter

Pending the granting of a charter to Esparto Papers, Inc., the organization of which recently was announced in these columns no formal statement of its plans will be forthcoming. While the first importation of 100 tons is actually in port the custom house red tape has not yet been uwound, and even samples are still unavailable. At least three other shipments are nearing port. When the charter actually has been granted at the close of the month organization will be effected and probably with Frederick E. Hasting, formerly associated with Dill & Collins as president, and R. C. B. Hay as secretary and treasurer. On the directorate will be men widely known in the paper manufacturing industries.

1900 Tons of Kryolite for Pennsylvania Salt Co.

The crew of the Norwegian steamer *Lom*, which arrived during the week with a cargo of 1,900 tons of Kryolite from Greenland for the Pennsylvania Salt Company, made the trip from Ivigtut in but ten days, but its crew ran the thermometric gamut from iceberg to midsummer heat in the Quaker City.

News Print Construction Booming in Canada

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 11, 1922.—The new mills and extensions of mills which are now under way in Canada will by 1924 increase the capacity for the production of news print in Canada to 1,500,000 tons per annum, or about 70 per cent of today's news print consumption on the North American continent and an amount equal to the total production of the U. S. and Canada in any year prior to 1912.

Two mills of 120 tons capacity per day are under construction, one at Three Rivers and one at Fort William. A 50-ton mill is being constructed at Bathurst, N. B., and a 100-ton mill is under way at Elko, B. C. At Kenora, Ont., a mill is being built by the Brooks-Backus Company which will eventually have a capacity of 1,000 tons a day, twice the capacity of the largest mill in existence. The Belgo Company is extending by 150 tons a day, and Price Bros. by 100 tons a day.

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PRICE TENDENCY IS UPWARD IN PAPER MARKET AT TORONTO

High Fuel and Raw Material Costs Sustain Advanced Quotations on All Grades—News Print Is Firm, Rags and Paper Stock Strengthen and Paper Box Board Continues in Excellent Demand—Mill Construction Progresses Rapidly—Pulp and Paper Mill Escapes Big Forest Fire—E. B. Eddy Co. to Erect Match Factory—U. S. Purchases Buy Half Million Acres of Pulp Limits.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., October 9, 1922.—The paper market continues active with a strong upward tendency in prices. The higher quotations are brought about by the increased cost of coal, pulp and waste material. Jobbers report that orders are now coming in more freely in view of the advancements which are taking place. The mills are getting busier and the wholesale trade declares that October so far has been a most promising month. The general improvement extends to all lines of paper, while pulp is feeling the corresponding impetus. The present outlook is of a satisfactory nature and the news print situation remains very firm. The rag and paper stock markets continue to strengthen and supplies in some lines are reported short. Paper box plants and board mills are doing a fine business and envelope manufacturers and producing stationers are all kept busy with the fall requisitions.

There is still a great scarcity of men for the lumber and pulp wood camps. One large Toronto concern has begun shipments of pulp wood on next year's contracts and expects that wood will share in the coming good times. In the general revival of the paper business, news print was the first to pick up, and now other lines have followed. Pulp is gradually coming to its own and, with the resuscitation of things industrially, it is felt that the demand for pulpwood will not be delayed much longer and that higher prices will prevail before many weeks elapse.

The labor situation at some points has become acute and offers of forty dollars per month and board are not very eagerly taken up. All this will mean higher prices for pulp wood. There has been quite an improvement in the printing trade, although the printers' strike in Toronto, which has been going on for sixteen months now, shows no sign of settlement. Most publishers have trained a new staff and are able to get out large special editions. Kraft paper is selling well and sulphate pulp has advanced five dollars per ton, now selling at seventy-five.

Good Progress on Construction Work

Good progress is being made on the new news print mill of the Fort William Paper Company at Fort William, which will be in operation in a few months with an output of 150 tons daily. The work of installing the equipment in the new book mill of the Provincial Paper Mills at Port Arthur is proceeding satisfactorily. An extension is being built to the machine room of the Ontario Paper Company at Thorold, which will be used as a finishing room for the output of No. 1 machine. The Abitibi plant at Iroquois Falls will, it is expected, soon reach its objective of five hundred tons of news print daily and the Thunder Bay Paper Company, of Port Arthur, is making preparations to increase its ground wood pulp output from thirty to fifty tons within the next few months.

Temiskaming Company's Plant Escapes

In the severe forest fire, which raged in Northern Ontario destroying the town of Haileybury and sweeping over an area of sixty miles along the T. and N. O. railway, wiping out several villages, rendering thousands homeless and doing four million dollars damage to property and timber limits, it is understood that the plant of the Temiskaming Pulp and Paper Company at Dixon Creek, a few miles out of Haileybury escaped. The mill has been in operation a few weeks only. At present the plant is not operating, its power supply being shut off owing to the fire. The rossing plant of the Riordon Company at Haileybury was burned and it is understood that considerable pulpwood in the fire swept zone was destroyed. Dr. C. D. Howe, of Toronto, commenting on the needs of greater protective measures, declares the lumber mills of Ontario give employment to 17,000 men in the bush alone and the pulp and paper mills employ 8,000 persons with an annual pay roll of $7,000,000. The invested capital of the lumber and paper industries in Ontario represents $150,000,000.

Will Erect Big Match Factory

The E. B. Eddy Company, of Hull, widely known pulp, paper, match and fiber ware manufacturer, intends constructing a new match factory which will cost a million dollars. Owing to a substantial increase in assessment, the company has abandoned plans of erecting the plant in Hull but will likely build in Deseronto, Ont., where, some months ago, the plant of the Dominion Match Company was acquired.

Object to Water Controller

Representatives of pulp, paper and power interests recently waited upon Hon. Beniah Bowman, Minister of Lands and Forests for Ontario, to protest against the appointment of a water controller by the Province. The water controller proposal was mooted as a means for quick settlement of disputes over water rights between timber interests, pulp wood operators, power companies and land owners. The consensus of opinion was that authority should be left in the hands of the Crown to avoid unnecessary expense and cumbersome machinery. Mr. Bowman announced that the next meeting of the committee would be held in Port Arthur in the near future at which the big timber and pulpwood operators in Northwestern Ontario would have an opportunity of making recommendations.

Big Sale of Pulp Limits

Half a million acres of timber land owned by the Algoma Eastern Railway between Oba and Hearst were recently sold for $1,300,000 to United States purchasers after several months of negotiations. Up to the present the lands have been an unproductive asset to the railway as it was not in a position to make developments and the price is considered by the company as a good one. General Manager W. H. Farrell intimates that the purchasers are United States pulp and paper interests and it is probable that they will erect a pulp and paper mill on the property which will add to the railroad's traffic.

Great Interest in Safety Work

A. P. Costigane, of Toronto, safety engineer of the Ontario Pulp and Paper Makers' Safety Association, recently paid a visit to several pulp and paper mills in Northwestern Ontario. He states that great interest is being developed in the work and that the companies and their employees are carrying on successful campaigns to lessen the number of accidents in their plants. The competition for the trophies of the association, which are now in their second year, is going on enthusiastically. It will be remembered that the Dryden Pulp and Paper Company won the shield last year in class A mills and the Don Valley Paper Company, of Toronto, in class B mills.

Another Newspaper Ceases Publication

The *Windsor Telegram*, which was founded in April last in Windsor, Ont., and of which A. F. Healey was managing director, has ceased publication, leaving the field in the border cities to the *Daily Star*. Many of the smaller cities in Ontario, which formerly had two or three dailies are now served by one, the high cost of production having driven several out of the field.

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326 West Madison Street Chicago, Ill.

CHICAGO BUYING RELAXES BUT PRICES REMAIN FIRM

Fewer Inquiries Are Received Although Mills Are Operating at Capacity—Coal Situation Is Relieved—News Print Still in Active Demand—Coated, Wrapping, Book and Fine Papers Progress Steadily—Higher Pulpwood Prices Expected—Container Club Will Hold Annual Business Meeting in November—Election of Officers Will Take Place—Other News of the Chicago Trade.

[FROM OUR REGULAR CORRESPONDENT.]

CHICAGO, October 7, 1922.—Buying has slowed up somewhat during the past week and inquiries are being received for orders that are not as large in volume as the trade had anticipated. Mills are running to capacity and the coal situation has been relieved since the seaman's strike has not affected coal shipments. All lake transportation is in good order and no delays have been reported at the headquarters.

News print has been in active demand though the last week has not equaled the previous one in point of volume of business. This has been attributed to the fact that the concerns are daily receiving their delayed shipments and are considering the amount to reorder by the present trend of affairs.

Wrapping papers have steadily advanced, both prices and sales increasing. The present aspect of inquiries show that business is on the increase. The better grades of papers sold more rapidly, salesmen believing that this is excellent evidence that business development is near at hand.

Fine and Book Papers In Good Demand

Coated mills and their representatives are doing as much business as that of the last six weeks. Concerns manufacturing coated products are the most optimistic of the entire trade. Book and writing papers are in demand, prices on both are advancing but salesmen have been receiving orders of large quantity. One prominent edition house has purchased some book paper from a firm that reported it had received its largest order from that company in over a year. A survey of printing houses showed that business was normal with increased work for the months of November and December.

Expect Higher Pulpwood Prices

Advices received by the local representatives of lumbermen operating in the north indicate that the paper manufacturers of that section are planning on entering the market within a short time and that the buying of hemlock logs and pulpwood will be exceptionally heavy this season. In the meantime the operators of Wisconsin and Upper Michigan are planning to start operations at the logging camps, and every possible effort is being made to get a sufficient number of skilled men to carry on the work in the woods. It is understood that an unusually large amount of pulpwood will be taken out in northern Ontario and eastern Quebec during the season, and that prices will be considerably higher than last year.

Container Club to Meet in November

A. J. Neumann, secretary and treasurer of the Container Club, 608 South Dearborn street, Chicago, announced that the annual meeting of the club for 1922 will be held in New York City, November 21 and 22, at the Biltmore Hotel.

Members have been informed that there will be no annual dinner this year and other forms of entertainment will be omitted on this occasion. The annual social features of the club were held during the July meeting at Rye, N. Y., and for this reason the club will not present them on their November program.

The New York meeting will be one of business only; annual reports will be made and officers are to be elected for the coming year. Another important event will be the appointment of numerous committees and the consideration of plans and activities for the next fiscal year of the club. A president, four vice-presidents, a general manager and a secretary-treasurer are to be elected.

A nominating committee consisting of Irving Hill, George Gair and Mr. Hunt has been appointed to present recommendations at the November gathering.

Howard Clayton, of the Japan Paper Company, importers, New York City, visited with the trade in the city.

Jottings of the Chicago Trade

Bargain Paper House, Inc., 423 West Ontario street, Chicago, has issued its October list of prices on paper and cardboard "seconds." The company's terms are 2 per cent, 30 days, in stock in Chicago. Offers are subject to prior sale, F. O. B. Chicago.

A petition for adjudication has been filed against the S. V. Wright Paper Company, by Lincoln Paper Company, $561; A. J. Gamble & Co., $18; and the South Side Window Cleaning Company, $3.

The Forsythe Paper Company, 10 South LaSalle street, announces that business is increasing and the future has a bright aspect.

Blunden-Lyon Paper Company, 730 West Monroe street, is doing big business. Ledgers and bonds have created big sales.

F. L. McClellan, president of the McClellan Paper Company, Minneapolis, Minn., transacted business in Chicago on October 5.

"Bob" Butterworth, manager of the Chicago office of the Champion Coated Paper Company, returned recently from a trip throughout the southeast, stopping at Milwaukee, Wis., on his way back.

The Decatur Paper Company, 601-603 North Church street, Decatur, Ill., has incorporated with a capital of $50,000. Incorporators were: William Clarence Westervelt, 866 N. Monroe street, Decatur, Ill.; Lola Alice Westervelt,; Lander Hammond. Correspondent, William C. Westervelt. The company will manufacture, buy, sell and deal in paper and paper products.

The Hon. John Strange, of the John Strange Paper and Pulp Company, is attending the meeting of the World's Society of Prohibition, held at Toronto, Can.

Harry Joyce, of the Empire Paper Company, Chicago, has purchased a new residence along the North Shore.

The LaSalle Paper Company, 171 North Dearborn street, has announced that it will handle the exclusive sales of the Highland Manufacturing Company's announcement lines. C. W. Lynch, who recently accepted a position with the LaSalle Company, will have charge of the line and intends to introduce a large display room for all the merchandise handled by his company.

Work of Forest Reservation Commission

WASHINGTON, D. C., October 11, 1922.—While the official report of the National Forest Reservation Commission will not be ready until December when it is submitted to Congress, it is understood that during the fiscal year ending June 30, 1922, the commission purchased under the Weeks law 242,169 acres valued at $800,584.96, making the average price $3.30 per acre.

During the same period in 1921 the commission purchased 112,397 acres valued at $499,081.28 which was an average cost of $4.44 per acre.

During the past fiscal year, the forestry land was purchased in the States of Alabama, Arkansas, Georgia, Maine, New Hampshire, North Carolina, Tennessee, Virginia, and West Virginia.

Although the commission asked Congress for an appropriation of a million dollars for the fiscal year of 1923, it was allowed on $450,000. In the fiscal year 1922 the appropriation was $600,000. Owing to the decreased appropriation the commission has made no purchases during the present fiscal year. A full report will be made by the Secretary of War who is chairman of the commission to Congress when it convenes.

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They also embody all modern ideas as to automatic compensation and adjustability.

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PROGRAM FOR "PAPER WEEK" AT CHICAGO

Except for the last-minute change in the program of the Salesmen's Association, to begin their sessions with a one o'clock luncheon on Tuesday, October 17, followed by a business meeting, the detailed program for Paper Week of the American Paper and Pulp and affiliated associations has been practically completed.

Manufacturers in the paper industry have been so busy the last few months, trying to make up for the depression of 1921, to take advantage of the turn to normal during the last few months, that it has been difficult as yet to find representatives of the fine paper group who felt they could spare the time to prepare a statement on present conditions. The fine paper situation, however, will be adequately presented by a prominent manufacturer and a merchant representing this group. This has been true of the merchants as well as of the manufacturers, but the balance of the program has been completed and arrangements for the week perfected to the last detail.

Dr. Hugh P. Baker, Executive Secretary of the American Paper and Pulp Association, leaves New York on Saturday to make any last-minute arrangements on the ground. When the first meetings are called to order on Tuesday morning, it is expected that nothing will have been left undone to make this the most successful of the the conferences held in Chicago every year. Every indication is that there will be a large attendance at all of the affiliated association meeting, as well as the general meetings of the American Paper and Pulp Association.

The salesmen's banquet promises to be the most successful event that that organization so far has sponsored.

The committee of the salesmen originally provided for an 11 o'clock business meeting, followed by a luncheon. The revised plan was arranged by the Chicago committee, of which Fred P. Whiteley is chairman, and changed this plan to begin the salesmen's day with a luncheon at one o'clock, to be followed by a discussion of business conditions in general and a business meeting. This will make it more along the lines of the monthly meetings being held by the district groups, with the exception that the Chicago meeting will be a national meeting instead of a regional gathering.

The program for "Paper Week" in detail is as follows:

Program of the Salesmen's Association of the Paper Industry

Tuesday, October 17, 1922

1 P. M.—Lunchon and business meeting in Club Grill. Informal discussion of market conditions by representatives of various branches of the industry.

7 P. M.—Banquet in Ball Room. Speakers: Hon. Frank O. Lowden, former Governor of Illinois; Mr. Edgar A. Guest, Detroit, Mich., poet and humorist; Dr. George Craig Stewart, Evanston, Ill., chaplain of the Salesmen's Association.

Affiliated Associations

Tuesday, October 17, 1922

FORENOON

	Room	Time
Book Paper Manufacturers' Association....	M-17	10:00 A. M.
Gummed Paper Manufacturers' Association.	M-15	10:00 A. M.
Waxed Paper Manufacturers' Association...	M- 9	10:00 A. M.
Woodlands Section	M-16	10:00 A. M.

AFTERNOON

Salesmen's Association luncheon and business meeting .....Club Grill		1:00 P. M.
Pulp Manufacturers' luncheon	M-16	12:30 P. M.
Cover Paper Manufacturers' Association....	M-17	2:00 P. M.
Pulp Manufacturers' Association	M-16	2:00 P. M.

EVENING

Salesmen's Association banquet .....Ball Room		7:00 P. M.
Writing, cover and merchants' conference...	D	7:00 P. M.

Wednesday, October 18, 1922

FORENOON

	Room	Time
Vegetable Parchment Manufacturers' Association	M-15	10:00 A. M.
Writing Paper Manufacturers' Association..	M- 9	10:00 A. M.
Wrapping Paper Manufacturers' Service Bureau	M-17	10:30 A. M.

AFTERNOON

Cardboard Manufacturers' Association	M-16	2:00 P. M.
Toilet Paper Converters' Association.....	M-10	2:00 P. M.
Sulphite Bond Division	M-11	2:30 P. M.

EVENING

Tissue Paper Manufacturers' Association....	G	7:00 P. M.

General Session American Paper and Pulp Association

Thursday, October 19, 1922, at 10.30 A. M. in the French Restaurant

General Subject—"Paper and Pulp—Today and Tomorrow."

Manufacturers—"Pulpwood and Wood Pulp," Thomas O. Ross, Hummel-Ross Company, Hopewell, Va.; "Coarse Papers," D. Clark Everest, Marathon Paper Company, Wausau, Wis.; "Fine Papers," ———.

Merchants—"Wrapping Paper," Frank E. Floyd, Crescent Paper Company, Indianapolis, Ind.; "Fine Papers," ———; "Standardization and Simplification," S. L. Willson, representing the Bureau of Standards, Washington, D. C.

Report of Resolutions Committee.

Joint Luncheon American Paper and Pulp Association and National Paper Trade Association

Thursday, October 19, 1922, at 1:30 in the Ball Room

General Subject—"Paper and Business—At Home and Abroad."

"Business Problems of the Day," George M. Reynolds, President, Continental and Commercial Bank, Chicago, Ill.

"Scandinavian Competition," Dr. Hugh P. Baker, Executive Secretary, American Paper and Pulp Association.

Program of the Woodlands Section

Tuesday, October 17, 1922, at 10 A. M. in Room M-16

"Buying Pulpwood by Grades or Specifications."

"Proposed Educational Tractor Demonstration Test."

"Formation of a Western Division of the Woodlands Section."

"Pulp and Pulpwood Statistics—the Situation Today."

"Control of the Bud Worm in Minnesota."

"Cutting Four-Foot Pulpwood by Portable Gasoline Saws."

"Results of Experiments in Weighing Wood Into the Mill."

"Advisability of Purchasing Peeled vs. Rough Hemlock."

"Proposed Investigations of Rate of Growth and Successful Cutting Regulations."

"Local Woods Operation Problems."

Round table discussion.

Lightning Strikes Carmichael Plant

[FROM OUR REGULAR CORRESPONDENT.]

WESTBROOK, Me., October 9, 1922.—The Carmichael plant of the S. D. Warren Company was struck by lightning last week, fire resulting, which was soon extinguished by the fire department with comparatively small damage.

Established 1886

Growth

The growth of an organization is not only indicated by the increasing volume of its business but also by the steady development of its facilities.

For the convenience of our mill friends we maintain our own foreign offices at Stureplan 13, Stockholm, Sweden. We also maintain domestic branch offices at 185 Pine Street, Holyoke, Mass., and No. 1 Humphrey Block, Kalamazoo, Mich.

M. GOTTESMAN & COMPANY

INCORPORATED

18 East 41st Street

New York, N. Y.

U. S. A.

Obituary

Daniel Lewerth

Coming as a distinct shock to relatives and his many friends in the paper and allied trades, was the announcement of the death of Daniel Lewerth, of Forest Hills, L. I., vice-president of Henry Lindenmeyr & Sons, 32 Bleecker street, New York, on Tuesday, October 3. In his passing, the paper industry of New York has suffered the loss of one of its most earnest and capable members.

Born in New York on April 16, 1876, and educated in its public schools, Mr. Lewerth at an early age entered the paper business in the employ of Henry Lindenmeyr, where he remained in various capacities for eighteen years. In 1907 he became one of the founders of the firm of Andrews & Lewerth, located at 72 Duane street, New York, later succeeded by Lewerth & Culbertson.

In 1921 Mr. Lewerth rejoined his old associates, returning to the corporation of Henry Lindenmeyr & Sons, as one of its vice-presidents. His reunion with his old friends in the Lindenmeyr organization, where his exceptional ability had been developed from the time of his youth, was indeed a happy one. Mr. Lewerth's love for "the old house," as he referred to it, persisted throughout the fourteen years of his absence from it.

His education did not end with the close of school days; he was ever a keen student of affairs and events. His special interest in paper and all that related to it, its manufacture and uses, resulted in his becoming exceptionally well informed on this subject.

The additional burden of war time activities and the unusual strain which these entailed led to a breakdown in Mr. Lewerth's health. Upon his return to New York in 1921 after nearly a year's absence to improve his health, Mr. Lewerth had completely recovered. From a recent attack of indigestion he was confined to his bed, later contracting pneumonia.

His untimely death at the age of 47 marked the end of a brilliant and extremely promising career.. Mr. Lewerth's strong personality, his keen sense of humor and unfailing optimism had endeared him to a wide circle of friends in both his business and social activities. He was a devoted friend to many. Mrs. Anna Hinkle Lewerth, his widow, and two children survive him.

Edward H. Tucker

SPRINGFIELD, Mass., October 10, 1922.—Edward H. Tucker, 47, president of the W. H. Carter Paper Company and a prominent clubman, died Sunday, October 1, in his home, 25 Birchwood avenue, Longmeadow, after a long illness. Mr. Tucker had been in ill health for several months. He was born in Willimantic, Conn., the son of David K. and Mary A. Tucker. His family moved to this city when he was a boy. His schooling brought him through the local high school and business college.

Mr. Tucker began his business career with the firm of Cutler & Porter, wholesale shoe dealers. After two years with that firm he was for eight years associated with his father, who was Springfield agent for the Tucker & Cook Manufacturing Company. Mr. Tucker's grandfather also had been interested in this firm, as well as in other New England industries.

Mr. Tucker next went to the H. W. Carter Paper Company, locating in North Adams as manager of a branch maintained under the name of the Berkshire Paper Company. Six years later that branch was merged with the parent company, he being appointed manager of the consolidated interests, with headquarters in this city, and he held that position until 1912, when he was elected president.

When the Connecticut Valley Stationers' Association was formed he gave largely of his time and ability in organizing the association and was its first president, serving for two years.

Mr. Tucker was a member of Greylock Lodge of Masons of North Adams and also of Springfield Lodge. He was a 32d degree Mason in the Scottish Rite and also was affiliated with all the York Rite bodies. He was eminent commander of Springfield Commandery, Knights Templar, in 1920. He also was a member of Melha Temple of the Mystic Shrine and of the Sons of the American Revolution. He was a member of the Masonic, Nayasset, Country, Publicity and Automobile clubs of this city. In politics he was a Republican. He was for many years a member of the Park Congregational Church.

EDWARD H. TUCKER

He married Anna M. Gladden, daughter of Theodore E. and Harriet C. (Bartlett) Gladden, in 1895, who survives him. He leaves two daughters, Madeline G. and Ruth, both at home, and a sister, Mrs. C. W. Roane, of this city.

To Start Work on Wigwam Paper Co. Plant

[FROM OUR REGULAR CORRESPONDENT]

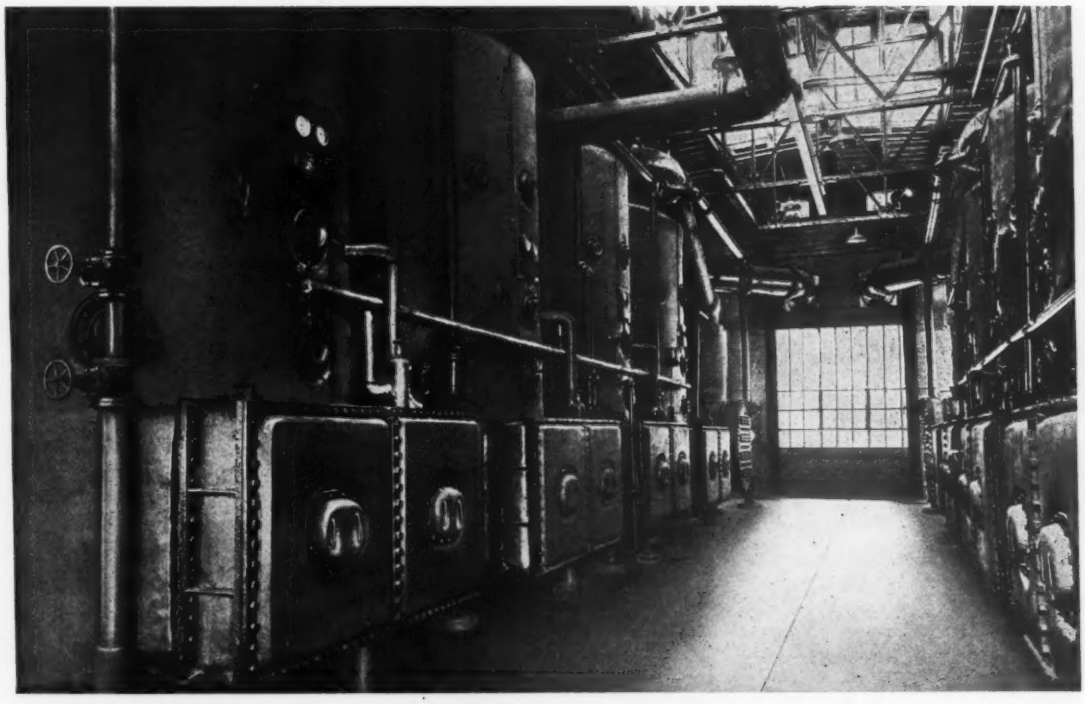
WASHINGTON, D. C., October 11, 1922.—Consul General Ryder, Vancouver, reports to the Commerce Department that a company has been organized under the name of the Wigwam Pulp and Paper Company for the purpose of erecting a large pulp and paper plant at Phillips Bridge, nine miles from Elko. The contract for the first unit of this plant has been awarded to McDougal-McNeill, Ltd., engineers of Essondale, B. C. This unit is estimated to cost about three and a half million dollars and will produce 100,000 tons of paper daily.

Two additional units will be constructed as soon as the first unit is in operation. The total capacity is to be 300,000 tons of paper per day and the cost is estimated at about $13,000,000. Work on the project is to be started immediately and pushed as rapidly as weather permits. The power dam will require about 35,000 cubic yards of concrete and it is estimated that the site will yield 100,000 horsepower.

Claims Against Paper Company

Mr. Justice Latchford, of Toronto, has directed that Mr. Howe, who was the contractor for the construction work of the Kaministiquia Pulp and Paper Company's plant at Port Arthur, be paid the sum of $60,000 out of court. The sum of $35,000 is directed to be paid in court to answer a claim of $29,000 by the city of Port Arthur for power supplied the company, which went into liquidation some months ago and whose plant was sold at auction for $200,000 to the Consolidated Water Power and Paper Company.

The balance of $105,000 is to be paid the Capital Trust Corporation, of Toronto, representing the bondholders.



The Zaremba Patent Evaporator

Excels All Others in the Concentration of Soda and Sulphate Black Liquor

with its great simplicity of construction and reliability of operation. We have had long and wide experience in such work and provide an all'round excellence that is unequalled.

Advantages—

Cylindrical bodies with few joints
Horizontal tubes, easily removed by unskilled labor
Large downtakes producing rapid circulation
Complete venting of air and gases
Ease of operation by cheap labor
Ready access to all parts for cleaning
Low cost of maintenance
Loss from foaming and entrainment eliminated

Because of these features which provide steady reliable operation—because Zaremba Evaporators are built for Long Life, Head Service and No Worry to their Owners—the West Virginia Pulp & Paper Co. in a period of ten years has installed sixteen Zaremba Multiple Effects in its mills. We illustrate a recent installation of two ten-foot Quadruple Effects in their Covington Mill—capacity, 400,000 gallons black liquor per day.

Hughes Centrifugal Foam Arrester:
(Patent applied for)

This Separator effectively prevents loss by foaming, splashing, or entrainment. It is the only separator which will arrest all foam, consolidate it into liquid form and return the material to Evaporator.

Our Foam Arresters are handling Jack-pine Black Liquor very successfully, providing a condensate sufficiently clean for use as Washwater. We furnish these Arresters for use with existing evaporators of any make.

Complete Soda Recovery Plants for Pulp Mills

ZAREMBA COMPANY
Niagara Life Building
Buffalo

XUM

New York Trade Jottings

Murray Bauxbaum, paper dealer, announces the transfer of all rights to the title Hikoma to Louis Golovine, of 173 W. Broadway.

* * *

Howard Clayton, of the Japan Paper Company, New York, is now visiting the Chicago trade.

* * *

The annual meeting of the Container Club for 1922 will be held at the Biltmore Hotel, New York, November 21 and 22.

* * *

Einar Ahlman, general manager of Kymmene, Inc., pulp manufacturers of Finland, was in New York this week on his first visit to America.

* * *

Edwin C. Chadwick, representative of the L. L. Brown Paper Company, Adams, Mass., recently moved his office from 38 Park Row, New York, to 277 Broadway, Room 1606.

* * *

The seventeenth annual convention of the Associated Business Papers, Inc., will be held Wednesday, Thursday and Friday of this week at the Hotel Astor, New York.

* * *

M. M. Cohen, paper and twine dealer, of 451-53 Washington street, New York, has recently added a new delivery truck to his company to facilitate the transportation of local orders.

* * *

P. J. Johnson, dealer in cotton waste, wipers and mill remnants, of 175 Pearl street, New York, has recently opened a department devoted to waste paper, rags and scrap bagging. J. A. Chapman will assume charge of the new division.

* * *

The Sterling Mill Supply Company, of 148 Wooster street, has leased the adjacent building, No. 146 Wooster street, where it contemplates the installation of three additional electric baling presses. The added building consists of four stories and a basement.

* * *

The 1922-23 pennant of the New York Industrial Paper League was won by the A. G. Nelson Paper Company, 362 W. 15th street, when the aggregation representing that concern defeated Lasher & Lathrop by a score of 2 to 1.

* * *

Morris Seltzer, president of the Empire State Paper Corporation, of 412-14 Lafayette street, New York, will leave next Wednesday for a two weeks' trip to Bermuda, accompanied by his wife and family.

* * *

Conrow Brothers, paper dealers, of 114 Worth street, New York, have recently added to their stock lines Chanticleer Bond and Lancaster Bond, made respectively by the Fox River Paper Company, Appleton, Wis., and the Gilbert Paper Company, Menasha, Wis.

* * *

H. Z. Schmiewind, president of the National City Paper Corporation, left for a tour of the West last week. Mr. Schmiewind, who is the American agent for the Schopper paper testing instruments, will visit the paper conventions in both Detroit and Chicago.

* * *

Henry Wellhouse, president of the National Paper Company, of Atlanta, Ga., was in New York last week upon his return from a three months' tour of Sweden, Germany, Switzerland, France, and England. Mr. Wellhouse arrived on the steamer *Majestic*.

* * *

Paul E. Vernon, who returned from Japan about eight weeks ago, furnished a novel entertainment for a few of his friends in the paper trade when he gave a talk illustrated with stereopticon slides at his home last week. Charles H. Baldwin, Nicholas Barrett, W. H. Holden, W. H. Stuart, A. C. Damon, A. C. Thomas and George McKinney were among those present.

* * *

"There has so far been no relief in the shortage of waste paper for the book, board, binders' board and card board paper mills," says Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, 18 E. 41st street, New York, in a report to the paper mills using this product. "The difficulty is in part the fact that the high cost of collection and transportation leaves a small margin for the junk collector to pay the housewife. In case the shortage were to continue indefinitely, it would be necessary for the paper industry to take some means of assuring itself of a regular and adequate supply of waste paper, possibly by independent organization of paper colection agencies, which has already been suggested in some quarters."

News of the Boston Trade

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 11, 1922.—Probably the most important price increases of the past two weeks are those reported in the box board market. The prices reported last week are considerably in advance of the old ones as was expected. Chip board is selling for $60-$65 while news took a corresponding jump, and single lined manila is quoted at as high as $70 with double runs up to $90. Binder's board is offered on the market at about $75 while patent coated cardboard is bringing $90 and higher.

The concensus of opinion among Boston paper merchants regarding the new tariff on paper as finally adopted by Congress is that the paper industry throughout the country will fare on a whole better than it did under the old Underwood tariff.

The Paper Makers' Advertising Club of Holyoke will have a large exhibit at the Direct Mail Advertising Associate Convention in Cincinnati the latter part of the month. The exhibit will include seventeen panels in the co-operative group, each panel representing the display of one member's products.

Howard H. Reynolds, of the B. D. Rising Paper Company, Housatonic, Mass., president of the Salesmen's Association of the paper industry, has returned from the New York conference full of plans for the Paper Week to be held in Chicago beginning October 16.

W. H. Claflin & Co., Inc., of 332 Summer street, is offering elite white wove xx envelopes, high cut, at attractive prices for lots of 1,000, 10,000 and 50,000. They are also making an attractive offer on triex white wove xxx envelopes, high cut.

Representatives of the Miller Falls Paper Company in the city this week report that the electrification of the plant is progressing rapidly and that orders continue to pour in, the mill running at capacity.

Arnold Roberts Company of this city is sending out its price lists of Eagle A envelopes printed on a sample of No. Sub. 20 white unglazed contract bond 6¾. It carries sizes 6¼, 6¾ and 10s white in the various grades, including coupon, agawam, persian, contract, airpost, chevron, and acceptance in their warehouse for immediate delivery.

International Strikers Circulate Handbills

[FROM OUR REGULAR CORRESPONDENT.]

LIVERMORE FALLS, Me., October 9, 1922.—Echoes of the strike of paper makers at the Livermore Falls mills of the International Paper Company which started a year ago last May, were heard here this week when large quantities of handbills were circulated. The handbills stated that practically every other mill company had raised wages except the International Paper Company and asked the men if they were going to be slaves to that organization. Sheriff Herba Allen has been notified.

XUM

G-E FLOW METERS

For Measuring
Steam, Water, Air,
Oil, Gas, Etc.

Indicating—Recording—Registering

Will Save Coal by the Trainload

If all the steam generated, and water used in the power plants of the country were properly metered, the saving in coal could be measured in trainloads.

General Electric Company

General Office
Schenectady, N.Y.

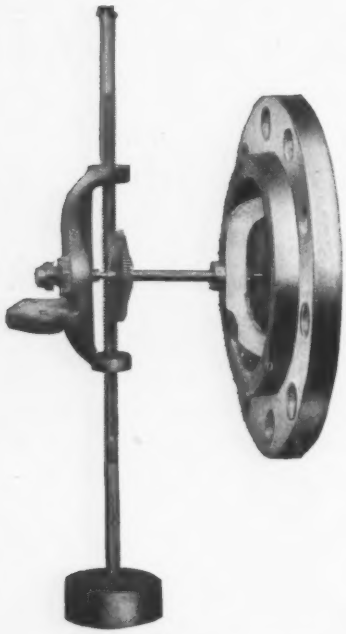
Sales Offices in
all large cities

340-54

Simplicity-

G-E Registering

Simplicity in design, accuracy of operation and dependability are the outstanding features of this new line of G-E registering Flow Meters.

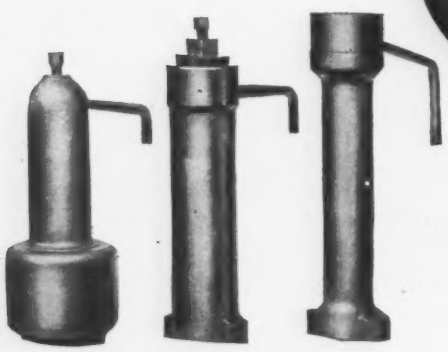


Internal Mechanism—Only one size of internal mechanism required for all capacities of meters. Float has large area furnishing ample power for operating meter. Working parts made of non-corrosive metal. No adjustment required after mechanism is assembled in meter.

Case

Body Casting

Clock and indicating-recording-registering mechanism are assembled as unit in case. Case can be readily attached or removed from main body casting.



Mercury Chambers—Maximum capacity of meter changed by using mercury chambers having different areas and heights.

GENERAL

Dependability

Flow Meters

The development of this new line of G-E Flow Meters is the result of careful observation and consideration of operating requirements.

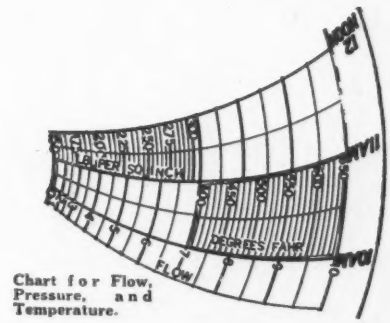


Chart for Flow, Pressure, and Temperature.

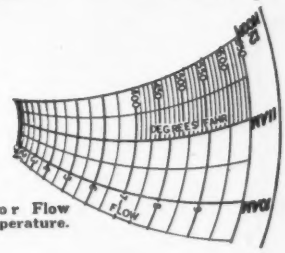


Chart for Flow and Temperature.

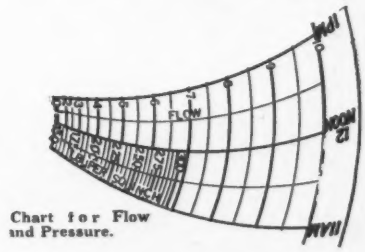
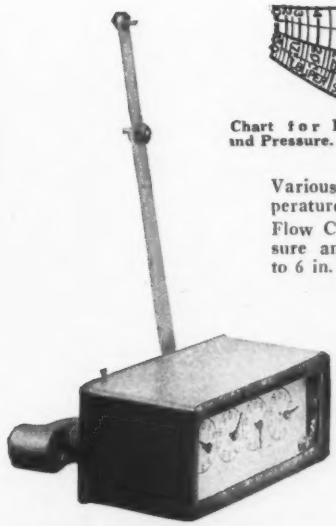


Chart for Flow and Pressure.

Various Flow, Pressure, and Temperature rulings can be supplied.

Flow Chart—12 in. diameter Pressure and Temperature equivalent to 6 in. chart.

Complete Meter—Note how recording, temperature and pressure elements are assembled in a dust-proof case as a compact unit, and easily accessible.



Register—Enclosed in dust-proof case, mounted in safe location, dials large and easily read.

The operation of the Register puts no additional load on the indicating and recording mechanism of the meter.

ELECTRIC

340-55

G-E REGISTERING FLOW METERS

G-E Indicating-Recording-Registering Flow Meter with recording temperature and pressure gauges.

G-E Indicating-Registering Flow Meter without graphic chart.

G-E Indicating-Recording-Registering Flow Meter with Recording Pressure Gauge.

G-E Indicating-Recording-Registering Flow Meter with Recording Temperature Gauge.

These newly designed G-E Flow Meters can be furnished for four different combinations of reading:

—flow;
—flow and temperature;
—flow and pressure;
—flow, temperature and pressure.

They can also be supplied without the graphic chart, for indicating the rate of flow and registering the total flow.

General Electric Company

General Office Schenectady, N.Y.

Sales Offices in all large cities

340-56

Agents
SUNDS AKTIEBOLAG
STRONG SULPHITE
indirect cooking

PERKINS-GOODWIN CO.
NEW YORK
PULP and PAPER

Agents
A/S Toten Cellulosefabrik
BLEACHED AND
EASY BLEACHING
SULPHITE

ALFRED LEEDS, President
KARL BECKER, Vice President

ERNEST R. COLLINS, Secretary
EDWARD M. MILLER, Treasurer

Becker Paper Corporation

350 Madison Ave., New York, N.Y.

317 Main Street, Springfield, Mass., Branch Office for New England States

Dealers in All Grades of Paper

SPECIALISTS IN

BOOK PAPER, GLASSINE and EMBOSSED GLASSINE PAPERS

Exclusive Distributors for

WESTFIELD RIVER PAPER COMPANY
RUSSELL, MASS.

SEASONAL INFLUENCE ON SULPHITE MANUFACTURING*

By Walter S. Haley, Sulphite Mill Supt. Parker-Young Co., Lincoln, N. H.

An old timer said, "I am an old man and have seen lots of trouble most of which never happened." The writer's experience in Sulphite Mills dates back many years. In that time he has seen lots of trouble, most of it avoidable. Many mysterious happenings in sulphite mills in early days are now easily explained and avoided almost without thought. We do not lay awake nights trying to decide whether to boil the lime water or to freeze it.

Formerly the advent of summer was dreaded in sulphite mills. What was known as usual summer troubles was expected to begin about June 1. A summer without much hot weather was as gratefully received as a mild winter. With the first frosty mornings in the fall sulphite men took a new interest in life.

Much of this article can be termed old stuff. Within the last year, however, two mills and probably others were so handicapped by warm weather as to seriously consider installing separators for the digestor relief. Separators were once used in every sulphite mill but have not been necessary for a number of years. A little ancient history may therefore be of interest to some members of the craft.

As long as the temperature of the acid in the storage and reclaiming tanks does not get above 90 degrees Fahrenheit or 32 degrees Centigrade no trouble need be experienced in getting strong cooking acid with either milk of lime or lime rock acid systems. The water used in the summer time very seldom gets above 75 degrees, Fahrenheit. By using sufficient cooling surface and enough water for cooling the relief from the digestors and the raw acid, the temperature can be kept below 90 degrees.

The amount of cooling surface can be curtailed if cold water is available from deep wells. It is generally cheaper, however, to instal plenty of cooling equipment and use the regular water supply. One mill in the west had summer troubles for nineteen years due to lack of cooler, the temperature of the acid reaching 95 degrees about June 1. Within 500 feet of the mill were abundant springs of water with a temperature of 55 degrees. At the writer's suggestion several hundred gallons per minute were pumped into the acid plant during warm weather. This effectually put a stop to their summer troubles.

To overcome warm weather conditions many ingenious devices have been evolved. In an endeavor to have warm acid absorb more SO_2 than is chemically possible such devices have been used as perforated pipes in the bottom of the tanks to distribute the relief liquor; nozzles pointing in different directions, and pipes entering the tanks at different points. Another way in which a simple matter has been complicated at times is to have the gas and liquor separated, the gas blowing directly into the liquor in the tank used to supply the digestors; the separated liquor run into another tank and portions of it used to blend with the acid under treatment.

In many cases perfectly good acid systems have been discarded for new ones of another type, all on account of not having sufficient cooling equipment. Many of these changes were proposed in hot weather. About the time the changes were made colder weather would set in and everything would be all right. The new stuff would get the credit for the improvement, and another summer would often evolve something else, either home grown or copied from some other mill.

I will describe briefly the methods and apparatus I have found effective in summer as well as in winter.

Sulphur Burner

The revolving sulphur burner with a brick lined combustion chamber will give the best results operated as follows:

For making acid for each ton of pulp per twenty-four hours open the front draft one square inch. Up to 50 tons of pulp per day one standard burner will give better results than more. For making acid for 50 tons of pulp have the front draft open 50 square inches. Regulate whatever additional air is needed by opening or closing the air inlet between the burner and the combustion chamber. If the gas test is low close the inlet a little and open it if test indicates danger of pulling over unburned sulphur. The writer was placed at one time in charge of a mill making 70 tons of pulp a day and using five sulphur burners with a consumption of 320 pounds of sulphur per ton. A year later was making more pulp and using only two of the burners and 237 pounds of sulphur per ton.

Sulphur Melting

In the same mill during this time installed a sulphur melter. Sulphur melting tanks have in a number of cases been tried and discarded, due to trouble in operating and cleaning. With the proper apparatus the difficulties have been overcome. Using melted sulphur a burner can be fed more uniformly. This means a higher average gas. The higher the gas tests the less Sulphuric gas will be formed.

Wet sulphur fed directly into the burner will cause sulphuric acid to be deposited in the coolers. Also, the heat units required to evaporate the moisture, if it is done in the burner, will lower the temperature in the combustion chamber sometimes below the point at which sulphurous gas is generated. If the sulphur is melted before it is fed into the burner the moisture is driven off outside. With melted sulphur a much shorter time is required to get the acid system to making strong acid after starting up cold. This decreases the amount of sulphuric which is always produced during the heating up period.

Furnace Gas

Gas to be low in sulphuric should test at least 15 per cent SO_2 and be as much stronger as the conditions will permit, care being taken not to go too high and allow unburned sulphur to be carried over into the cooler. The gas should be tested at least once an hour by the acid maker and the results recorded, regardless of any automatic devices or laboratory tests. The acid maker should vary the amount of air admitted to the chamber in accordance with his jests. His interest should be stimulated to observe the changes in the makeup of the acid due to gas variation. The acid maker should also test the strength of the finished acid and the temperature of the water supply, the lime water and the finished acid.

Furnace Gas Cooler

A simple cooler of six inch lead pipes, the pipes submerged, with a cooling surface of 25 or 30 square feet per ton of pulp, will cool the gas amply without the need of an extraordinary amount of water. The water used in a gas cooler of this capacity can first be used for cooling the raw acid. While the above type of cooler is mentioned, any other kind of cooler will do the work as well providing it has sufficient cooling capacity. Extraordinary claims have been made for certain types of coolers as not filling with unburned sulphur and so forth; the pattern of the cooler, however, has nothing to do with the sublimation of sulphur.

To get good results with any acid system the inlet and outlet to the cooler should be large enough. Something not generally known is that the hot gas entering the cooler has four times the volume of the cooled gas leaving the cooler. To facilitate the absorbing of the gas in the acid system the vacuum should be as

(*Continued on page* 42)

* Read at the meeting of the New England Division of American Pulp and Paper Mill Superintendents' Association, Lincoln, N. H., October 7, 1922.

XUM

Let Them Drink to your business health in cups you sell

each drink a cup—each cup a sale for you and at lowest cost of any cup on the market.

At such prices SALES RESISTANCE IS NEGLIGIBLE and our direct advertising assistance in your city will get immediate results as it is now doing in many cities.

Burt's Paper Drinking Cups are made of fine white paper, without wax to make drinks taste, and are reinforced so holders are not necessary. They are kept under glass and cannot be wasted or soiled before use.

Cups retail at one fourth cent—dispensers at five dollars.

F. N. Burt Company, Ltd.
Paper Cup Division
Buffalo, N. Y.

THE REPUBLIC RUBBER CO. YOUNGSTOWN-OHIO

One Way to Reduce Paper Mill Operating Costs

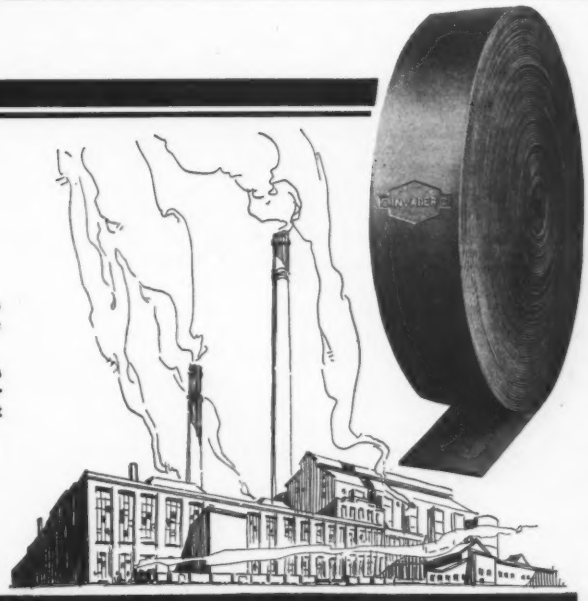
Belting unscientifically adapted to your needs, not only is expensive in itself, but by wasting power robs you of a large percentage of your plant efficiency.

To Reduce operating costs specify Republic Belting. It's strength, economy and efficiency are traditional in the paper mill field. Republic experience assures a belt that will meet your individual needs most effectively.

Why Not Investigate?

THE REPUBLIC RUBBER COMPANY
Youngstown, Ohio

New York Chicago Philadelphia Minneapolis
Kansas City Cincinnati Atlanta Pittsburgh



REPUBLIC BELTING

XUM

SEASONAL INFLUENCE ON SULPHITE MANUFACTURING

(*Continued from page* 40)

low as possible where the acid is finished as it leaves the acid system. This emuhasizes the need of large enough pipes to prevent friction. A pipe area of four square inches per ton of pulp for the hot gas and one inch for the cold gas gives fine results. For a 100 ton acid system use a 24 inch pipe for the hot gas and a 12 inch for the cooled gas.

Raw Acid Cooler

With a milk of lime system the acid as it leaves the absorption tanks has increased in temperature. This is due to the heat produced when the lime is slakened and in the further chemical reaction which takes place when the sulphurous and sulphuric gases unite with the lime water. No amount of cooling of the gas previously will prevent this increase. The temperature can be reduced nearly to the original temperature of the water supply by the use of a lead cooler. 300 feet of 4 inch lead pipe submerged in a shallow vat of water will be sufficient for a 60 ton mill.

A small centrifugal pump is generally used to pump the raw acid from the absorption tank to the auxiliary tank or to the reclaiming tank. This pump will pump the acid through the cooler on its way to its destination without any noticeable increase in the power used. When the weather becomes cool enough the acid can be pumped direct again and the cooler and vat can be drained off until another summer.

Operating Acid System

The acid plant should be making fresh acid all the time that a digester is relieving and making acid only about as fast as it is used. For illustration, there will be about 7,000 gallons of liquid relieved in cooking a ten ton digester. About 20,000 gallons of fresh acid should be made and blended with this in the storage tank. With a definite length of cooking time and with the vacuum pumps speeded right a blend of new and old acid can be made with a high and uniform test maintained day after day. No relief separator is needed to do this, merely have sufficient cooling equipment to keep the temperature down to 90 degrees.

Steaming Digesters and Spacing

With two or more digesters it is of the utmost importance that suitable time shall elapse between the starting of each cook. With two digesters cooking eight hours or a little over keep at least four hours apart. Unless a rule is made sometimes one digester will creep up on the other until they are steamed close together. The spacing of the digesters gives a more uniform pull on the boiler plant and distributes the relieved liquor and gas to better advantage to the relief cooler. This is very important as it gives the cooler a better chance to cool the relief before it is blended with the acid in the reclaiming tanks. The acid will also show a more even test.

A western mill has six digesters and burns oil. After arranging a schedule for steaming and spacing the production was increased with a reduction in fuel oil used of 200 barrels a week. The strength of the acid was increased and the amount of sulphur used per ton of pulp reduced.

Relief Strainers

To build the acid up and reduce the amount of sulphur per ton it is necessary to have the relief pipes of sufficient size so that when wide open at the latter part of the cooking the pressure in the digester can be pulled down 25 or 30 pounds. A good type of relief strainer is one that is attached to the cover and nearly fills the neck of the digester. For a ten ton digester have had a strainer with 1,100 3/16 inch holes. A separate steam regulator for each digester is in use nearly everywhere. The value of a small steam pipe, by-passing the regular steam valve, is not so generally realized. A four inch steam valve with a one and a half inch by-pass is of great benefit in getting uniform circulation in a 10 ton digester. With it a schedule for steaming can be posted in the digester room. When followed uniform cooking is assured.

Relief By-Passes

In addition to the steam by-pass a small pipe by-passing the regular relief valve makes an ideal combination for uniform cooking. We have in our mill instruction sheets for cooking different lengths of time. We merely give instructions to the digester men to use 7 hour, 8 hour, or 9 hour schedule. They refer to the proper sheet and act accordingly. Instead of drawing ideal curves on the recording charts these instructions state how long to use the steam by-pass only; when to open the four inch valve one-quarter turn and when another one-fourth turn. In like manner the operating of the relief valves is designated; when to open the relief valve wide and recover the gas. All set down in a few words.

The Relief Cooler

The relief cooler should be large enough and be supplied with water enough so that all of the relieved liquor and gas can be blended with the freshly made acid without raising the temperature in the storage and reclaiming tanks above 90 degrees. With these conditions such things as separators, auxiliary tanks for reclaiming, and extra tanks for separating and blanding the recovered liquor and new acid will not be needed.

Storage Tanks

For a 60 ton mill two large wooden tanks work very well, to be used for storage and reclaiming. The relief is distributed about equally in the two atnks. A four inch pipe passing down through the center of each tank liberates the relief through the open ends of the pipes. The ends pointing down and about 18 inches from the bottom of the tanks. The volume of relief being discharged at one point in each tank causes the contents of the tanks to circulate freely thereby coming in contact with the ends of the pipe. The results are fully equal to any net work of perforated pipes crisscrossing the bottoms of the tanks.

Conclusion

In using the above methods one thing that works nicely is the interest that the cooks and acid makers take in carrying out the instructions and manipulating the simple apparatus .The absolute certainty of obtaining good results continually after perhaps years of uncertainty gives them great satisfaction. Any man likes to do a good job and to be allowed a share in the credit for it.

Woodlands Section to Discuss Experiment Station

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., October 11, 1922.—The establishment of a forest experiment station in the lake states region to study problems of reforestation, growth and protection of existing timber will be one of the important matters to come before the Woodlands Section of the American Paper and Pulp Association at its meeting in Chicago, Tuesday, October 17.

The paper industry's foresters are anxious to see such a station established to investigate problems pertaining to the timber used by pulp mills. Such stations are now in existence in the southern states, and in the Appalachian mountain region, and stations in New England, also a paper mill region, and the lake states have been recommended.

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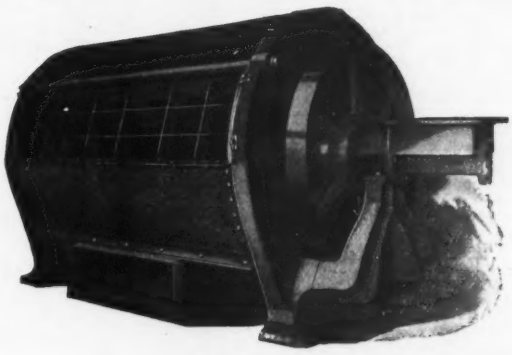

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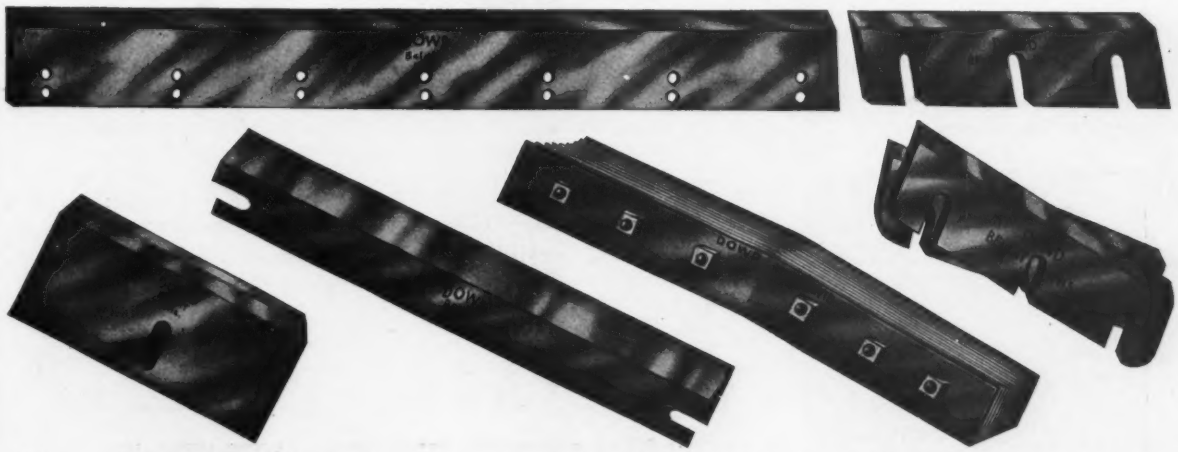

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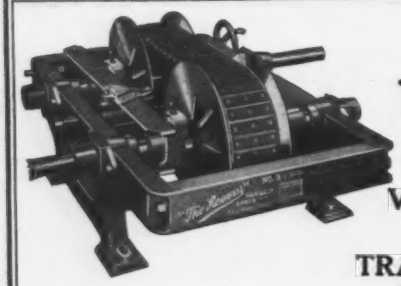

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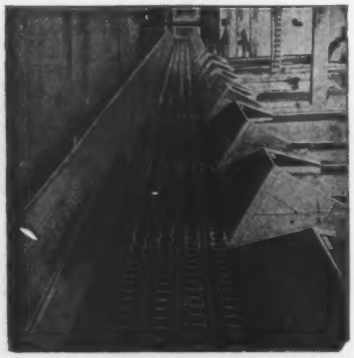

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THE problem of putting in equipment that will bring the plant to a high state of efficiency and material handling costs down to rock bottom is one that is worrying many paper and pulp mill Owners, Engineers, Architects, etc.

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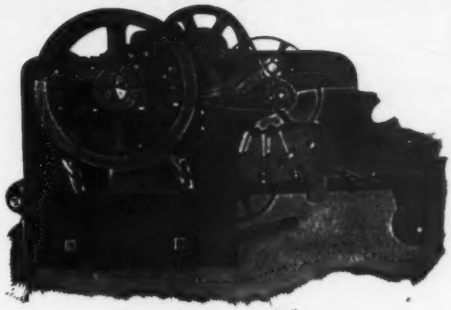

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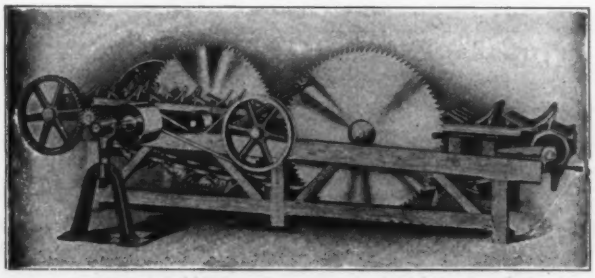

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Editorial

Vol. LXXV New York, October 12, 1922 No. 15
FIFTY-FIRST YEAR

Foreign Paper Statistics

The exports of paper, according to statistics furnished by the Department of Commerce continued to decline for July as compared with June, the figures for the former months being only $2,002,332 and for the latter $2,124,671, but showed a considerable increase over July a year ago when the figures were $1,335,640. The figures for the seven months ending with July were $13,826,330 as compared with $21,522,022 for the same period last year.

News print especially showed a considerable decline, the figures for July being only $190,527 as compared with $264,214 for June. Even here, however, the figures for July of this year were decidedly larger than for July a year ago when they amounted only to $119,286. The exports of news print for the seven months ending with July were valued at $1,526,584 as compared with $1,568,088 for the same period last year.

The exports of wrapping paper for July were valued at $193,792 as compared with $192,441 for June. The exports of wrapping paper for the seven months ending with July were valued at $1,302,135.

The exports of writing paper except in papeteries were valued at $80,953 as compared with $93,625 for June. The exports for the seven months ending with July were valued at $665,159.

The exports of paper board and strawboard for July amounted to $164,215 as compared with $203,451 for June and $99,500 for July of last year. The exports of these grades for the seven months ending with July were valued at $1,154,254 as compared with $1,732,973 for the same period last year.

The exports of toilet paper for July were valued at $44,849 as compared with $51,116 for June. The exports of toilet paper for the seven months ending with July were valued at $312,885.

The exports of paper bags for July were valued at $89,961 as compared with $86,487 for June and $36,384 for July of last year. The exports of paper bags for the seven months' period ending with July were valued at $664,460 as compared with $572,740 for the same period of last year.

The exports of tissue and crepe paper for July were valued at $66,984 as compared with $46,034 for June. The exports of these goods for the seven months' period ending with July were valued at $343,377.

The imports of paper for July also were slightly less than for June, the figures for the former month being $7,025,277, compared with $7,343,252 for June and $6,168,911 for July of last year. The imports of paper for the seven months ending with July were valued at $48,739,478 as compared with $56,635,090 for the same period last year.

The imports of news print paper for July amounted to $5,608,152 as compared with $5,889,695 for June and $6,496,094 for July of last year. The imports of news print for the seven months ending with July were valued at $39,539,694 as compared with $48,170,254 for the same period last year.

The imports of wrapping paper for July were valued at $273,323 as compared with $225,044 for June and $36,515 for July of last year. The imports of wrapping paper for the seven months' period ending with July were valued at $1,166,712 as compared with $1,298,583 for the same period last year.

The imports of rags for paper making during July were valued at $244,506 as compared with $230,596 for June and $109,450 for July of last year. The imports of rags for the seven months' period ending with July were valued at $2,148,070 as compared with $1,095,100 for the same period last year.

The imports of all other varieties of paper stock for July were valued at $364,313 as compared with $359,621 for June and $162,470 for July of last year. The imports of all varieties of paper stock for the seven months ending with July were valued at $2,076,837 as compared with $1,280,567 for the same period last year.

The imports of ground wood for July were valued at $517,507 as compared with $401,454 for June and $265,936 for July of last year. The imports of ground wood for the seven months ending with July amounted to $2,446,930 as compared with $2,014,135 for the same period last year.

The imports of unbleached sulphate for July were valued at $1,389,746 as compared with $1,585,014 for June and $659,962 for July of last year. The imports of unbleached sulphate for the seven months ending with July were valued at $8,067,836 as compared with $4,536,590 for the same period last year.

The imports of unbleached sulphite for July were valued at $1,866,799 as compared with $1,239,408 for June and $1,043,937 for July of last year. The imports of unbleached sulphite for the seven months ending with July amounted to $10,457,222 as compared with $6,410,348 for the same period last year.

The imports of bleached sulphate for July were valued at $176,964 as compared with $72,986, for June and $186 for July of last year. The imports of bleached sulphate for the seven months ending with July were valued at $44,001 as compared with $73,738 for the same period last year.

The imports of bleached sulphite for July were valued at $1,368,606 as compared with $1,275,947 for June and $608,511 for July of last year. The imports of bleached sulphite for the seven months ending with July were valued at $9,247,088 as compared with $4,702,339 for the same period last year.

Paper Demand from Printers

The monthly chart of printing sales and purchases, issued by the Department of General Service of the American Writing Paper Company, of Holyoke, Mass., shows that printing and paper purchases for the month of July were virtually the same as those of a year ago.

July shows a falling off in printing sales from the month of June. This condition is undoubtedly a continuation of the effect of the seasonal drop, and of the recent railroad and mine strikes. A rather interesting feature, however, is the fact that paper purchases show an increase over the preceding month. This may be due to the fact that a large number of paper merchants and printers have seen the advisability of building up their paper stocks in anticipation of continued trouble in transportation and an increasing demand for paper. If this suppo-

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sition is true, this tendencey should be ever more in evidence in the figures for the month of August.

Conditions have been so uncertain during the past few months and fluctuations in the printing business as shown in the chart have been so rapid that it is almost impossible to draw any conclusions as to future business from the 1922 figures. On the other hand, past experience has amply proven that the printing industry feels the effects of improved business conditions or a period of depression several months after these have become very evident in general business.

All available statistics seem to point to a period of prosperity; and the settlement of the coal strike and railroad shopmen's strike have already resulted in considerable increase in business in almost every industry. It is, therefore, reasonable to assume that the printing industry is headed for a period of prosperity. This is particularly true because of the big movements being conducted towards the elimination of waste and the adoption of definite standards in paper, printing equipment and finished product, and on increasing use of all kinds of paper for direct advertising material.

Canadian Paper and Pulp Stock Recover

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 11, 1922.—The recovery which has taken place in the pulp and paper industry is graphically illustrated by a study of the market value of the various pulp and paper securities listed on the Montreal Stock Exchange. In the twelve months ended September last there had been a loss of over $86,000,000 in these securities as compared with the price in September, 1920. The present year has to record a gain during the twelve months, that is from September, 1921, to September, 1922, of slightly over $30,000,000. This leaves the value of these securities at the present time $56,643,000 below the value during the peak prices of 1920. The estimate includes the following securities: Abitibi common, Brompton common, Laurentide, Price Brothers, Provincial Paper common, the old Riordon common, Howard Smith common, Spanish River common and preferred, and Wayagamack.

Taking the analysis from the point of view of the values at current market prices it is seen that to the end of the third week in September the values of these securities at market prices then ruling were $97,533,000. This compares with a value given one year ago of $67,469,000, and of a value in September, 1920, of $154,176,000, and a value on the first of January, 1919, when the real rise in the paper stocks began—of $53,000,000.

From this it will be seen that as compared with the value January 1, 1919, these securities have advanced $44,500,000. As compared with the value at the peak, they are down $56,643,000. As compared with the value one year ago, they are up $30,000,000.

Revoke Reappraisal Clause in Tariff

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 11, 1922.—The Customs Service of the Treasury Department has revoked Paragraph 17 of the regulations in Treasury Decision 39,165 issued June 15, 1922. The revocation in this particular paragraph in the regulations means that no reappraisement will be made by collectors of customs because of dumping.

Paragraph 17 provided for the reappraisement of merchandise by a collector of customs if he later believed that the merchandise was being dumped on the American market. This reappraisement feature was evidently found unsatisfactory because the Customs Service has revoked it.

To Discuss Standardization Paper Week

An important addition has been made to the program for the fall business conference of the American Paper and Pulp Association, in the securing of S. L. Willson to describe the work that is being done by the Bureau of Standards to effect economies by the simplification of paper sizes, and similar standardization of products of the mills.

Mr. Willson, who has long been a notable figure in the paper industry, particularly on the merchandising side, has been enlisted by Mr. Hoover to work with the Bureau of Standards on the problem of simplification of paper. Some of the work already done along these lines has been made public by the Bureau of Standards, but at the request of the manufacturers, Mr. Willson has agreed to outline the work proposed and in progress at the forenoon session of the American Paper and Pulp Association, on Thursday, October 19. The men in the industry who have served as an advisory committee from the paper industry for the paper section of the Bureau of Standards have been so convinced of the importance of the work being done that they asked that time be given this subject on the Paper Week program.

An addition has also been made to the program for the noon joint luncheon of the manufacturers and merchants, for at the suggestion of President Raybold of the American Paper and Pulp Association, Dr. Hugh P. Baker, Executive Secretary of the Association, will tell some of the conditions which he found during his summer trip to the paper mills of Scandinavia.

Dr. Baker is also scheduled to address the Wrapping Paper Division of the National Paper Trade Association on Wednesday, but his Thursday talk will be along entirely different lines from the address before the merchants.

Appoint Paper Sub-Committee

WASHINGTON, D. C., October 11, 1922.—A paper sub-committee has been appointed by the Federal Specifications Board which is an inter-departmental board organized by the Director of the Budget with the object of having departmental specifications standardized. The paper committee is designated the Technical Committee on Paper and the members of the committee are as follows:

F. S. Curtis, chairman, representing the Bureau of Standards; Captain J. M. Ward, Quartermaster Corps, representing the War Department; E. O. Reed, representing the Government Printing Office; W. A. E. Doying, representing the Post Office Department; Lt. Com. E. C. Edwards, representing the Navy Department; A. B. Butrick, representing the Treasury Department; and F. P. Veitch, representing the Bureau of Chemistry.

The first meeting of this committee has been held and it is planned to continue them every two weeks. Recommendations will be made by the sub-committee from time to time to the Federal Specifications Board and it is believed that standardized paper specifications can be worked out for all Government departments. It is understood that later paper manufacturers will be called into conference by this committee.

Big Demand for Pulp Stones in Canada

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 11, 1922.—A steady demand for pulp stones for use in the production of ground pulp is reported. English and American stones are at present being used, both of which are giving satisfaction. There is a preference for the English stones, which are said to possess greater lasting qualities. This advantage, however, is not believed to be sufficient to offset their greater cost and the additional time required to bring them from England. The better grade of American stone, when sufficient time is allowed for proper seasoning, is giving entire satisfaction.

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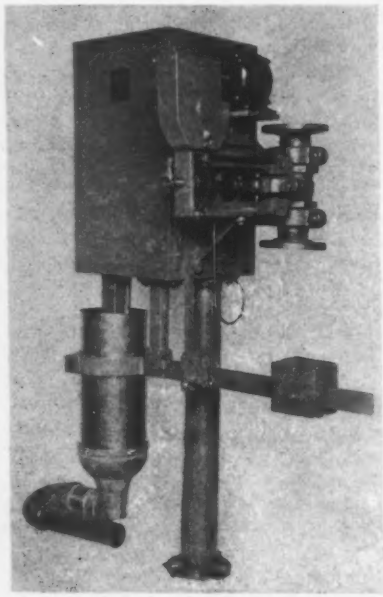

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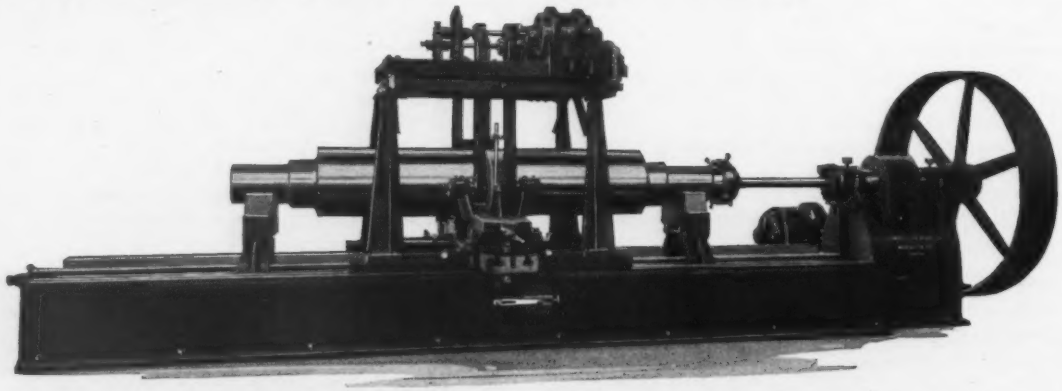

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AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W.G. MacNAUGHTON, Secretary

SIZING PAPER WITH ROSIN*

By Dr. Rudolf Sieber

The following article is a description of a number of experiments and observations on the sizing of paper with rosin, made by the author during a period of several years. The study of this subject was carried out not only in the laboratory but in the plant as well. The author is careful to indicate that this work is by no means complete and is not intended as the last word on the subject, but rather that the experimental research, described herein, can form the basis of further study and experimentation. Nevertheless, the value of this work is undoubted and it forms a real contribution to our knowledge of the conditions affecting the sizing of paper with rosin.—*Trans.*

Suspension of Free Rosin and Electrolytes

The mixtures, containing rosin, which are used for sizing paper, contain quite a considerable proportion of the rosin in the free form. Part is already found in the free state after the manufacture of the rosin soap, and part results through dissociation—hydrolysis—when a milky solution of the soap is made from the sodium resinate compound.

Considered from the standpoint of colloidal chemistry, the milky size forms a fine suspension of small particles of free rosin. As is known, such suspensions are very sensitive towards admixtures of electrolytes. When these are added, the suspension is transformed into a true two-phase system, which consists of a residue found at the bottom of the vessel and a water-clear liquid on top. It is a well known fact that a milky suspension of rosin will be easily separated into flakes by the addition of solutions of inorganic salts. The processes, that take place in this phenomenon, have not been explained up to the present time from the colloidal chemical standpoint.

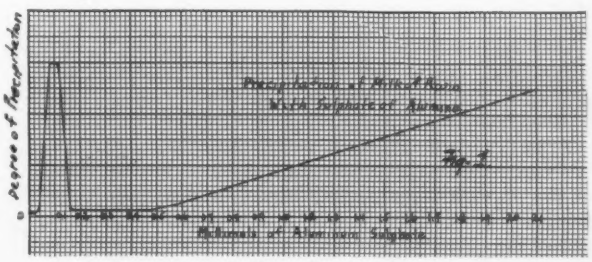
Pure Rosin Solution Considered First

In the first place only a pure rosin solution is considered, and not the milky rosin mixture which is used in practical work. It is not possible to derive any accurate conclusions about the behavior of the entire mixture from the behavior of one of its constituents. Additional experimentation is required before any such conclusions can be drawn, but the work that was done with the pure rosin solution is, however, of considerable value in explaining many phenomena, occuring in the use of milk of rosin.

One of the first factors that was examined was the influence of a solution of sulphate of alumina on the suspension of free rosin. This is of the greatest interest due to the fact that it is just that electrolyte or salts of similar nature that are employed almost exclusively in practical work for the precipitation of the milky rosin solution.

Experiments with Sulphate of Alumina Solutions

The following experiments were carried out to determine the reciprocal influence of sulphate of alumina solutions and the milk of rosin mixture on each other. In these tests a solution of chemically pure sulphate of alumina at definite concentrations was used on the one hand and also a suspension of free rosin, which is obtained by dissolving rosin in alcohol and pouring the solution in a thin stream into distilled water. A pipette may be used to good advantage for this purpose. The solution is allowed to stand untouched for 24 hours, in order to allow the coarser particles to settle out. About 20 cubic centimeter samples of this rosin suspension are poured into tall roomy test tubes and mixed with equal volumes of aluminum sulphate solutions, containing decreasing proportions of the salt. Thus the first test tube contains 20 cubic centimeters of the rosin suspension and 20 cubic centimeters of the diluted sulphate of alumina solution, the second test tube the same quantity of the rosin suspension but 10 cubic centimeters of sulphate of alumina solution and 10 cubic centimeters of distilled water, and so on. Consequently, the total quantity of the liquid was the same in all the test tubes, and also the concentration of rosin. After the test tubes had been inverted, they were allowed to remain untouched and after two hours they were examined. The room temperature was about 20 degrees C. From table (1) and likewise from curve sheet (1), it is evident that limiting values exist, that is, values below which precipitation does not take place within the alloted time.



*Zellstoff und Papier, volume 1, 15-19; 65-69; 139-42; 184-88; volume 2, 99-103; 134-39. Translated by Ismar Ginsberg, B.S., Chem. Eng.

TABLE 1

Concentration in milli-molecules of $Al_2(SO_4)_3$ per liter	Behavior of the rosin suspension	Remarks
20.90	Complete precipitation	
10.45	Complete precipitation	
5.23	Complete precipitation	
2.61	Complete precipitation	Upper precipitation zone.
1.31	Slight precipitation	
0.653	Strong precipitation	
0.327	No precipitation	Upper zone of no precipitation.
0.163	No precipitation	
0.082	Complete precipitation	Lower precipitation zone.
0.041	Slight precipitation	
0.020	No precipitation	Lower zone of no precipitation.
0.010	No precipitation	
0.005	No precipitation	

A lower limit lies at about 0.08 millimol, an upper limit at about 0.6 millimol of aluminum sulphate in a liter solution. In the zone which lies between the two limiting values, precipitation took place after a period of 24 hours and after 36 hours the precipitation was complete. In contradistinction thereto precipitation took place much more rapidly in the flocculation zone, just as well in the upper as in the lower zone, and equally as rapidly in both zones. At times separation into flakes took place more quickly in the lower zone.

Effect of the Nature of the Rosin

It was observed that the nature of the rosin had no effect on the phenomenon. The same circumstances were observed with rosins which differed very widely from one another. At first glance this appeared to be somewhat remarkable, but it is not at all a strange phenomenon, although it has not been known up to the present time in this case because of the lack of any definite knowledge on the subject. For example in the case of gum mastic, the same phenomenon has been been observed and studied. (See Muenchener mediz. Wochenschrift, 1903, No. 11.)

Explanation of the Phenomenon

What then is the explanation of this phenomenon? The following observations may be of value in answering this question. The suspension of free rosin is a colloidal sol, which is electrically charged. Discharge of the electricity in the suspended particles results through the addition of an electrolyte. This process causes the particles to agglomerate and thereby flocculate. (The lower precipitation zone.) The discharge or charge of the dispersive phase (particles of rosin) is influenced by the absorption of positive charged colloidal aluminum hydroxide, which is contained in the electrolyte due to the hydrolytic splitting, that is, the hydrolysis of the sulphate of alumina, dissolved in water. In case sufficient aluminum hydroxide is present in the solution, the particles of rosin can now be completely covered with a positive layer of hydroxide. This takes place under certain peculiar conditions, so that the suspended particles of rosin have not the time to agglomerate and form large flakes. The result will now be a positive sol (upper zone of no precipitation). Now if the addition of electrolyte is increased, then absorption of the sulphate ions, that is the anions, takes place, which finally results in the separation of the rosin in flake form: (the upper precipitation zone.) If the quantity of electrolyte added is large enough in the first place, then the upper precipitation zone is formed at once. The necessity of the existence of a limiting value follows likewise directly from this consideration. It is just the limiting quantity of electrolyte which effects the discharge of the sol.

Analysis of the Precipitate

When the resulting precipitate is examined to ascertain its content of electrolyte, it is found that that obtained in the upper zone contains both alumina, Al_2O_3, and sulphate, SO_4 ion. However, while the quantity of the alumina ion is measurable, that of the sulphate ion is only very small. For example, the content of alumina in such a precipitate was found to be 0.008 to 0.012 per cent. It is ascertained that these precipitates differ appreciably from those, which are obtained by the action of alumina sulphate on free milk of rosin, as it is used in practical operation. While the latter are voluminous, the former have almost a granular structure. The total surface area of the latter is therefore much smaller.

Conclusions Derived from the Experiment

It follows from what has been said above, that the requirements of precipitating agents, when solutions of free rosin are used, would in no way be very small. The concentration of the rosin suspension was 1.5 grams per liter. For example when a 7.5 per cent addition of the paper stuff is taken as a basis and when it is assumed that 2 per cent of rosin would be necessary for the sizing, then the concentration of the rosin in the above solution would correspond exactly.

Accordingly we have the following calculation: One liter of paper stuff solution—75 grams of fibers—1.5 grams of rosin, which is approximately equivalent to 0.51 grams of aluminum sulphate. (The figure 0.51 gram is obtained from the fact according to Table 1 about 1.5 molecules of sulphate of alumina are necessary to produce certain precipitation in the upper zone.)

These figures on the percentage basis will be as follows: 100 grams of fibers—2.0 grams of rosin—0.66 grams of sulphate of alumina. This is far more than a rosin solution, which contains 40 per cent of free rosin, requires. At an acid number of 11.8, only 0.19 grams of sulphate of alumina is required for the precipitation of 2 grams of rosin (this does not mean that this quantity is required in the sizing operation).

The Influence of Other Electrolytes

In this connection, that is, as far as the influence of other electrolytes on the rosin milk is concerned, we are interested primarily in the composition of the factory water, the degree of hardness and the factors which bring this about.

The influence of electrolytes on colloidal suspensions has been frequently the subject of investigations in the past and consequently we are very well informed regarding the processes which ensue in this case. These are fixed by a law, the so-called law of valency. This law or rather principle, which does not hold good for all cases and which is apparently only an approximation of a law which is not exactly understood at the present time, states, that the ability of an ion to precipitate a colloidal suspension is dependent on its valency. The greater the valency, the less of the ion is required to precipitate the suspension.

Of course, the valency of the cathion is the important consideration for the negative colloid, and that of the negative ion, the anion, is determinative for the positive colloid.

Limiting Values for Various Electrolytes

As the milky solution of free rosin possesses a negative charge, as has been mentioned above, its behavior can be predicted with a high degree of accuracy. In the following table, Table 2, there are given various observed limiting values for several electrolytes. The experiments were carried out in exactly the same manner as has been described in the case of sulphate of alumina. From this table it is evident that the tri-valent ions, such as iron and aluminum, have a stronger precipitating action than the uni-valent ions.

TABLE 2

Electrolyte	Precipitating value millimol per liter	Remarks
NaCl	1,100	
KCl	1,200	
$CaCl_2$	27	
$CaSO_4$	10	Incomplete.
$BaCl_2$	22	
$MgSO_4$	15	
$FeCl_3$	0.04	
$\frac{Al_2(SO_4)_3}{2}$	0.04	Lower zone.

As far as the iron salt is concerned, it was suspected that in this case the rule did not apply very exactly. Experiments were carried out with iron chloride, which proved that this suspicion was correct.

Experiment with Iron Chloride

The concentration of the rosin solution was kept the same as that in the experiment with sulphate of alumina, and the other details were maintained exactly as heretofore. The iron salt behaves almost exactly as the aluminum salt. The precipitation in the lower zone is caused by the action of positive hydroxide, consequently about equal concentrations of the two salts correspond to the lower limiting value, that is, 0.041 millimol of aluminum sulphate and 0.044 millimol of iron chloride, $FeCl_3$. On the other hand as far as the precipitation in the upper zone is concerned, the anion is the determinative factor, and consequently the bi-valent sulphate ion in the case of sulphate of alumina has a greater precipitating action than the uni-valent Cl ion in this case. Precipitation is complete when the concentration of the former is 1.3 millimols, while that of the latter is 25 millimols.

Rapidity of the Precipitation and Influence of the Temperature

The rapidity of the precipitation, induced by the electrolytes, is influenced to considerable degree by the temperature. The speed increases as the temperature increases. The following table, Table 3, shows this very clearly. The curve, seen in figure 2, is drawn from the average values of the speed of precipitation, obtained from the afore-mentioned table.

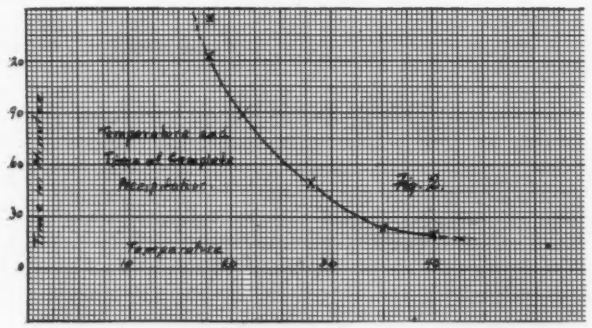


Fig. 2.

TABLE 3

Electrolyte	Time in minutes required for complete precipitation at 18	28	35	40 degrees C.
NaCl	120	40	30	30
$MgSO_4$	120	30	20	20
$CaSO_4$	190	40	30	30
$Al_2(SO_4)_3$	100	20	20	15
$FeCl_3$	90	20	20	15
Average	124	30	24	22

It is evident that the greatest increase in the speed occurs in the interval from 20 to 35 degrees C.

An examination of the various precipitates revealed the fact that they all contained anions as well as cathions of the various electrolytes.

Experiments with Several Electrolytes Used Simultaneously

Several experiments were carried out in which the precipitating action of several electrolytes, used simultaneously, was investigated. The action of a number of electrolytes on a suspension is not an additive function, but in general the conditions are such, that the common action of the entire number of electrolytes is smaller than the sum of the individual actions. It can be determined from the experiments, which were carried out, that this holds good also for the suspension of free rosin. This is interesting in so far as it affords the conclusion that hard water can effect flocculation of the rosin milk, without the quantity of each individual constituent of the salts that produce hardness overstepping its limiting value.

When the limiting values of the calcium and magnesium salts, which have been determined above, are compared with the conditions as they exist in practice, the following conclusions are obtained. The calcium salts precipitate at concentrations, which lie in the neighborhood of about 25 millimols per liter. The corresponding value for the magnesium salts lie at about 15 millimols. These figures are converted by calculation into 140 or 84 degrees of hardness (German). One degree hardness on the German scale is equal to one gram of calcium oxide in 100 liters, which is equal to 17.8 millimols. Consequently it is easily seen without any further discussion that a pure suspension of free rosin is stable in every way even towards very hard water.

In conclusion it may also be said that the use of pure suspensions of free rosin would not be more advantageous in respect to the amount of alum required for precipitation than the free rosin sizes, which have been used up to the present time, but that on the other hand, they would afford a far greater degree of security against flocculation through the agency of the hard salts in water.

Suspensions of Free Rosin from the Standpoint of Colloidal Chemistry

According to what has been said previously, the pure milk of rosin is to be considered as a suspension of fine particles of rosin in water, as the dispersive medium. Observation of a drop of such a suspension under the ultra-microscope reveals a constant movement of the rosin particles, the Brownian motion.

The thing that interests us in the first place is the absolute size of the particles of rosin. It is, to be sure, possible to prepare suspensions, containing different sizes of particles and with different degrees of dispersion, by the proper selection of conditions. The methods, which have been described up to this point, result mostly in the production of coarse suspensions. However, if the alcoholic solution of rosin is allowed to flow into water under the proper conditions, which avoid the agglomeration of the particles to form coarse grains, for example by squirting the solution through extremely fine nozzles under pressure, solutions of a high degree of dispersion are obtained.

Outwardly there appears to be no change in the appearance of the suspensions, as the degree of the dispersion begins to increase. If however the degree of dispersion is increased still further, then the suspensions gradually become translucent, until finally the ever-increasingly clearer solutions become brown in color, in contrast to the white color of the former solutions. They also become almost completely transparent.

Properties of the Brown Solutions

These brown solutions possess the property of running through filter paper just like the aforementioned milk of rosin solutions. These solutions however behave entirely differently under the microscope. The brown solution can no longer be resolved into the dispersed phase, the rosin, and the medium of dispersion, water. But due to the fact that rosin is not soluble in water they are not true solutions either. The solution is colloidal in the strictest sense of the word, that is the individual particles of the same are no longer visible under the ordinary microscope.

However, when the solution is examined under a special ultramicroscope, an instrument which is provided with a very strong illuminating arrangement for the objective on one side only, then it may be recognized that the system is actually two-phase in character. The extremely fine particles reflect the light that falls upon them and appear as strongly illuminated discs on a dark background, an effect which is similar to a ray of light making visible the dust in the air of the room. The true size of the particles of rosin cannot be determined directly. This must be ascertained by other means.

Size of Particles and Surface Area

It is possible to obtain colloidal solutions of rosin in this manner that contain particles of the solid, varying in diameter from 0.01 millimeter of the coarsest particles to about 0.002 millimeter, or 0.2 Mu, which is usual in colloidal solutions. These are average dimensions, and, as in any system, there are particles which are larger and some which are smaller. However, as the important

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factor in the use of rosin solutions for the sizing of paper is not the magnitude of the particles but the total surface area of the dispersed phase, that is of the colloidal rosin, the following table, Table 4, is appended to show the relation between the diameters of the particles and surface area.

TABLE 4

If one gram of rosin is dispersed in spheres of diameter	Then the total surface area of the particles will amount to
1 millimeter	50 square centimeters.
0.1 millimeter	500 square centimeters.
0.01 millimeter	5,000 square centimeters.
0.001 millimeter	5 square meters.
0.0001 millimeter	50 square meters.
0.00001 millimeter	500 square meters.

The paper maker is always striving to obtain the greatest possible surface area in the free rosin part of the size or of the finished milk of rosin. There can be no doubt but that this condition and likewise the greatest efficiency of the sizing operation will be attained with any given quantity of rosin by using it in the state of most perfect colloidal dispersion.

Factors Influencing Stability of the Suspensions

Furthermore in this connection the factors, which influence the stability of the suspensions, are of special interest. It is clear right at the outset that the higher the degree of the dispersion, the less the tendency for the dispersions to settle out. While the milky suspensions of rosin will soon show a deposit of the solid rosin substance at the bottom of the vessel in which they are allowed to stand, on the other hand the brown and likewise the brownish opalescent solutions or dispersions of rosin, which are true colloidal solutions in every way, remain in perfect suspension, with absolutely no sedimentation of any sort for months and even years along.

A rise in temperature is also a factor, which exerts a marked effect on the stability of the rosin suspension. When the temperature increases above the fusion point of rosin, then complete coagulation of the dispersed rosin takes place quite rapidly.

Influence of Alkaline Substances on the Rosin Suspension

It has often been observed that negative dispersions, like that of rosin, are made more stable by the addition of alkaline substances, which give negative ions on solution in water. As negative ions, that is the hydroxyl ion, possess a negative charge of electricity, it is apparent that the similiarity between them and the negatively charged suspension of rosin is what might possibly be the reason for the increased stability of the colloidal solution. Practically, the use of a little alkali in the rosin milk suspension helps to keep it in that condition. Similarly, organic salts, which have an alkaline reaction, such as phenol and its homologues, will exert the same action.

Rosin Emulsoid or Emulsion

Besides the colloidal solutions which have been mentioned above, there is still another sort of colloidal solution, which is known as the emulsoid. Emulsoids are very similar to emulsions, which is a mixture of two dissimilar liquids, which are not soluble in one another. While one of the characteristic properties of suspensions is their great instability in the presence of electrolytes, emulsions, on the other hand, exhibit an extraordinary stability towards the precipitating action of electrolytes.

One of the best known materials, which belongs in this class, is animal glue. The aqueous solution of this substance, which is obtained after allowing the glue to swell up and then diluting the solution, is a typical emulsion.

It is really a remarkable fact that when a suspension is mixed with an emulsion, the sensitivity of the former to the precipitating action of electrolytes is reduced to an extraordinarily large degree. In this manner it is possible to make rosin suspensions very resistant to coagulation. This action may be explained as being due to the fact that each particle of the rosin suspension is encircled with a coating of the emulsion, with the result that a stable colloid is obtained. Colloidal emulsions, which can be used for this purpose besides solutions of glue, are particularly fats and oils. These phenomena are however of lesser importance for rosin solutions than they are in making solutions of glue and gelatine.

Behavior of the Free Rosin Suspension to the Cellulose Fiber

It is known that not only true solutions but also colloidal solutions show changes in concentration at the surface. This phenomenon, in which not only the colloidal solutions but also some other foreign subtance is concerned, is known as adsorption. The phenomenon of adsorption has received considerable attention in the past and much investigation and experimentation has been performed along these lines. The general law of adsorption states that the percentage of the substance that is removed from the solution due to the phenomenon of adsorption, is greater, the more dilute the solution. The former contention that the absorbing surface of the body acts only as a solvent for the absorbed substance has been proven to be incorrect.

However, as far as the absorptive effect of the various vegetable fibers for rosin size is concerned, there is practically no information of any kind available at the present time. Certain observations have been made with the derived conclusion that half-stuff is able to absorb only very small quantities of rosin from rosin size solutions. (See *Papierfabrikant*, 1912.) The hypothesis advanced to the effect that the fiber itself has a precipitating action of the rosin is without any basis.

Experiments with Half-Stuff

In order to obtain some idea at least as to the absorptive properties of half-stuff for rosin, a number of experiments were instituted. For this purpose the half-stuff was beaten in the experimental hollander with condensed water, the pulpy mass was then pressed out and dried in the air. A definite weight of this mass, easily separable into fibers in the presence of water, was then taken and mixed with the rosin size and distilled water. After a determined length of time, about 5 hours, the quantity of rosin, which remained in the suspension, was determined quantitatively.

The results of this experiment are given in the following table,

TABLE 5

Half-stuff used	100 grams of the half-stuff absorbs grams of rosin	Per cent ash	Remarks
Cotton	0.145	1.06	.....
Sulphite cellulose 1	0.13	....	Ink..
Sulphite cellulose 2	0.09	1.13	.....
Soda cellulose	0.18	....	Runs
Ground wood 1	0.16	0.38	.....
Ground wood 2	0.12	....	.....

Table 5. From them the conclusion can be unhesitatingly drawn that all the different half-stuffs, that were examined, were able to absorb only a minimum amount of rosin. It was also noted that the quantities of the rosin are absorbed by the same raw materials in different states of manufacture. The amounts absorved, however, do not bear any relation to the content of ash in the fiber.

Examination of the Process Under the Microscope

When the process is watched under the microscope, it may also be determined that an accumulation of rosin particles takes place on the surface of the fiber in a moderate amount only. In order to determine whether the taking-up of rosin by the fiber is a true adsorption process, the following investigatoion was carried out with pure filter paper, which had been separated into fibers, as the absorptive medium. A rosin solution was slightly opalescent, brown in color and could be resolved into its constituent parts only by the aid of the ultramicroscope. About 10 grams of filter paper, absolutely dry, were used at a time. The duration of the experiment was 12 hours, the temperature 20 degrees C.

The concentration of the rosin solution before and after absorption was determined titrimetrically and volumetrically, the latter method being used for the slighter concentrations. After the con-

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clusion of the experiment, during which the flasks were shaken constantly but slowly, they were allowed to stand, until the fibrous matters had settled out and larger samples of the suspension could be taken.

The results of the experiment were tabulated and carefully examined to see if they did not agree with the conditions expressed by the law of adsorption. At first glance, from study of the circumstances surrounding the phenomenon, it appears to be indicated that an adsorption could not have taken place in this case. It is well known that the suspensions of free rosin or colloidal rosin solution possess negative charges. The vegetable fibers in a natural, aqueous suspension likewise possess a similar charge. On the other hand it is well known that when the absorbent and the absorptive substance possess the same clerical charge, no adsorption can take place. But this rule holds good strictly only when electrolytes are being absorbed. The rule is applicable to colloidal solutions in a limited degree only. There are various other processes in which colloidal solutions are absorbed by materials charged similarly as the latter, as for example, the absorption of indigo suspensions by fibrous materials, the absorption of Congo red acid in the same manner and the absorption of lead chromate by cotton.

Consequently the conclusion may well be drawn that a true adsorption takes place in the case of the action of rosin suspensions on paper fibers. However, additional investigation is necessary to afford further information concern the exact course of the absorption process.

Beating of the Paper Stuff and the Absorption Process

It is undoubtedly of considerable value to determine just what effect the beating of the paper stuff has on the absorption process, what changes take place therein when paper stuff of different degrees of beating is used in the place of the unbeaten fiber. It may be assumed with a considerable degree of safety that in this case the absorptive powers of the fibers will be much greater. As the changes in concentration at the surface of the rosin solution take place chiefly in this case because of surface energy, hence it is easy to understand that the principal factor in determining the magnitude of the change is the magnitude of the absorbing surface. As the length of time of beating increases, as the size of the fiber becomes smaller both in length and width, the adsorptive surface naturally increases as well and to be sure this increase is surprisingly rapid. Accordingly the intensity of the absorption is affected in the same manner. Table 6 indicates the results that were obtained in two series of experiments, which were carried out with the same half-stuff, that was used to obtain the results given in Table 5.

TABLE 6

Beaten paper stuff	Grams of rosin absorbed by 100 grams of stuff	Remarks
Cotton	0.41	Ink blots
Sulphite cellulose	0.56	Ink blots

The concentration is the same as in Table 4.

Absorption is a Physical Process Only

As has been mentioned above, the absorption of rosin by pure ashless fibers must be merely a mechanical process, consequently one that is limited by the surface energy. In the case of half-stuff, which contains a certain amount of ash, there is also the possibility of electrical absorption taking place. The particles of rosin can be accumulated on the surface by processes, similar to what takes place in coagulation, and can be precipitated thereon.

The absorption of rosin by beaten cellulose, consequently by cellulose which has been partially hydrolyzed, is still more complicated, as in this material there is present a colloidal emulsion, a cellulose slime. At any rate in this case a reciprocal precipitation is scarcely to be expected. However the influence of colloidal suspensions and colloidal emulsions on each other is a phenomenon which has received but little attention up to the present time. The absorption, that is, the change in concentration at the limiting surfaces of the fiber and of the rosin size, follows, clearly at least in the case of the half-stuff containing ash, after fixation of the rosin on the fiber.

The solution can be separated from the fibrous substances, it can be poured off without removing any of the rosin on the surface of the fiber. Just how strong the fixation of the rosin on the surface of the fiber is, whether it is brought about by coagulation on the same or if there are other causes to which it can be traced, cannot be told with any degree of certainty at the present time. This fact is however of interest, namely, that sizing with rosin in this manner, whether the rosin is in the form of a suspension or in a colloidal solution, did not result in making the paper capable of taking ink. In the case of almost ash-free cellulose the fixation of the rosin size appears to be far less fast than in cellulose which contains some ash.

Rosin Does Not Diffuse in Unbeaten Fibers

The experiments that were carried out to determine the effect of rosin on unbeaten fibers led to the positive conclusion that the rosin did not diffuse through the unbeaten fiber. Rosin suspensions have naturally no diffusive capability at all, and colloidal suspensions only a minimum with respect to parchment diaphragms. In the case of beaten fibers it is possible that other factors play an important role in the phenomenon.

As has been mentioned, the absorbed and fixed rosin has practically no perceptible sizing action on the paper. Whether this fact is due to the small amount of rosin that is fixed in this manner or else to the manner of the fixation process, cannot be determined with certainty. Certain experiments, which will be described later, however, indicate that the manner of the fixation of the rosin on the paper fiber is of great influenuce in making the paper suitable for writing purposes.

Behavior of Rosin Towards Fillers

Finally there remains to be mentioned the behavior of free rosin suspensions towards a group of materials, which are known in practice as fillers, earths. Exclusive of gypsum, whose behavior was discussed under the subject of electroyltes, all the other fillers are insoluble in water, that is such materials as kaolin, heavy spar, talc, etc. Certainly from the superficial examination and consideration of the matter, the tendency would be to assume that these materials cannot exert any influence on the rosin suspension and neither can the rosin suspension have any action on them. There are no chemical, molecular reactions possible in this case. But when the matter is studied more deeply, it is seen that the flotation of these fillers on water results likewise in a coarse suspension, and there must not be omitted from consideration the possibility of a certain amount of absorption of these suspended particles. However, it was found from experimentation, by shaking kaolin with a suspension of rosin, that the change in concentration was so small, that no conclusion could be drawn that real adsorption took place. Later in this article there will be described a series of experiments, which were made with the intent purpose of determining whether any loss in rosin was induced by these phenomena.

(To be continued)

Tell How to Get More Heat From Poor Fuels

The heating of combustion air in order to obtain greater heat from the combustion of low-grade fuels, is the subject of a paper by Manne T. Lindhagen, civil engineer at the Mechanical Testing Institute in Stockholm, which appears in serial form beginning September 15, in *Svensk Papperstidning*, The author deals with wood, peat, coal with a high percentage of ash, and combustible shale. His theoretical results are corroborated by records obtained from tests with air heaters used in England and France.

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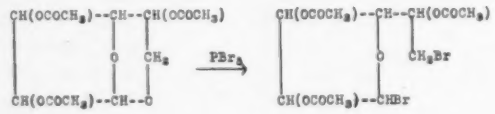
POLYSACCHARIDES. XV. THE CONSTITUTION OF DIAMYLOSE AND OF THE ANHYDROSUGAR (CELLOSAN) WHICH IS THE BUILDING UNIT OF CELLULOSE

By P. Karrer and Alex. P. Smirnoff[1]

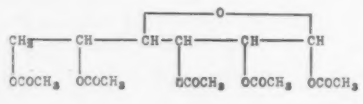
Recently (Helvetica Chim. Acta 5, 124) we have described a new method for determining the constitution of the anhydrosugars. In this the oxygen bridge of the anhydrosugar is opened by the action of phosphorus pentabromide and bromine atoms enter the molecule in place of the oxygen, and are attached to the carbon atoms which, in the original compound, were the beginning and the end of the oxygen bridge. Thus, triacetyllevoglucosan (I) and phosphorus pentabromide give aceto-l, 6-dibromoglucose (II):



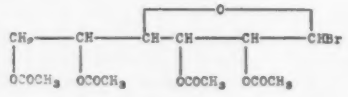
I II

Before applying the reaction to the more complicated anhydrosugars, such as diamylose, starch and cellulose, we tested the behavior of the acetyl compounds of several simple sugars towards phosphorus pentabromide. The action of the reagent was continued for 12 minutes in all cases, and was carried out on a boiling water-bath.

Pentaacetylglucose (III), under these conditions, gave very good yields (about 60 per cent) of aceto-l-bromoglucose (IV), but no detectable amount of aceto-l, 6-dibromoglucose (see below):



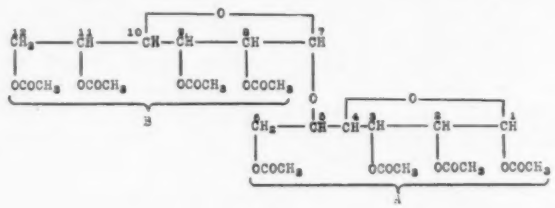
III



IV

In order to establish that the failure to detect aceto-l, 6-dibromoglucose was not due to an incorrect or an incomplete working up of the reaction product, an experiment was carried out in which, before the reaction with phosphorus pentabromide, five per cent of acetodibromoglucose were added and the reaction then carried out in the usual way. Under these conditions aceto-l, 6-dibromoglucose could be detected in addition to aceto-l-bromoglucose. From these experiments it follows that, under the conditions employed in the reaction, the acetylated hydroxyl group 6 of pentaacetylglucose is not replaced by bromine, or, if at all, only to a very slight degree, and that aceto-l-bromoglucose is formed as the principal product.

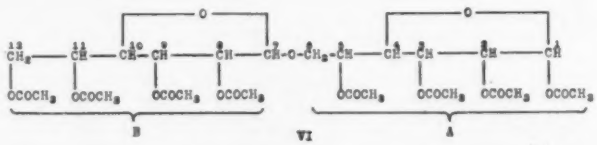
Following this, acetylated cellobiose, whose constitution has been proven to be (V)[2], was subjected to the phosphorus pentabromide treatment. In such a reaction, as has been shown in another place,



V

a considerable degree of decomposition of the disaccharide complex into monosaccharide compounds occurs. According to the above, the A half of the acetylated cellobiose molecule should not give aceto-l, 6-dibromoglucose; on analogous grounds the B half of the acetylated cellobiose molecule should not give any considerable amount of aceto-l, 6-dibromoglucose, but it should be transformed into aceto-l-monobromoglucose. This has been confirmed by experiment; we found in the reaction product very considerable amounts of aceto-l-bromoglucose, but no aceto-l, 6-dibromoglucose.

Acetylated maltose, according to the investigations of Haworth and Leitch, must be formulated as follows (VI):



VI

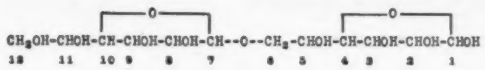
From a comparison with the results obtained with acetylated glucose and cellobiose, we would expect that the A half of acetylated maltose would yield aceto-l, 6-dibromoglucose, the B half aceto-l-bromoglucose upon treatment with phosphorus pentabromide. The experimental results agree with this assumption: we isolated from the reaction product aceto-l, 6-dibromoglucose and aceto-l-bromoglucose. The latter substance is very easy to isolate. The isolation of the former requires greater care and experience, since mixtures of aceto-l-bromoglucose and aceto-l, 6-dibromoglucose are difficult to separate.

After the serviceableness of the method had been proven by the use of acetylated sugars of known constitution, we attempted to determine the constitution of acetylated anhydrosugars.

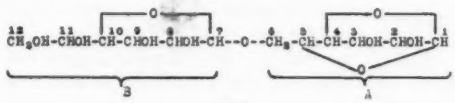
The constitution of diamylose, the parent substance of the α-amyloses and of starch, is not definitely known. We do know that it contains a maltose anhydride, in which the hydroxyl group 1 (formula VIa) is linked, in anhydride form, with some one of the remaining hydroxyls of the molecule. In particular, it is not known whether the oxygen bridge extends from carbon atom 1 to another carbon atom of the same glucose residue (that is, to 2, 3, or 5, as the formula VII), or whether the bridge is connected with the second glucose residue; for example, to carbon atom 12 (or 11, 9, 8, as in formula VIII).

[1] Helvetica Chimica Acta, 5, 187-201 (1922). Translated by C. J. West, Chairman, Committee on Bibliography, TAPPI.

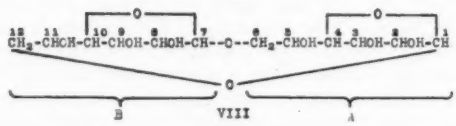
[2] Haworth, J. Chem. Soc. 119, 194 (1921); Karrer and Widmer, Helvetica Chim. Acta, 4, 263, 295 (1921); Bergmann and Schotte, Berichte 54, 1568 (1921).



VIa



VII

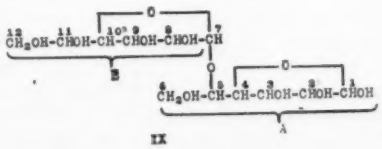


VIII

As is readily seen, the treatment with phosphorus pentabromide of an acetylated anhydromaltose in which the oxygen bridge extends from 1 to 2, 3, or 5, would result only in the formation of acetotribromoglucose (from the A half) and of aceto-l-bromoglucose (from the B half). An acetylated anhydrosugar in which the bridge extends from 1 to 8, 9, 11, or 12, would, on the other hand, yield from the A half aceto-l, 6-dibromoglucose, and from the B half either aceto-l, 6-dibromoglucose (if the bridge was from 1 to 12), or some other acetodibromoglucose; however, no aceto-l-bromoglucose would be formed. Experimental evidence would, therefore, differentiate between the two cases. Upon treatment of the acetylated diamylose with phosphorus pentabromide, we obtained aceto-l, 6-dibromoglucose, but no aceto-l-bromoglucose. Thus it is proven that, in diamylose, the anhydro-oxygen linkage is from carbon atom 1 to a carbon atom in the second glucose residue (8, 9, 11, or 12). We will return to this point below.

Acetylated starch behaves, in its reaction towards phosphorus pentabromide, in the same manner as the acetylated diamylose. This is to be expected, since starch is a polymerized form of diamylose. One obtains from the action of phosphorus pentabromide upon acetylated starch aceto-l, 6-dibromoglucose, but no aceto-l-bromoglucose. The analogy between starch and *a*-amylose is thereby strengthened by an additional point and the view that starch consists of polymerized diamylose has been subjected to a new proof.

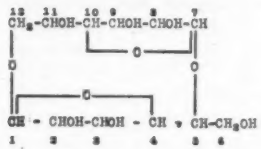
Finally we applied the phosphorus pentabromide decomposition to a completely acetylated cellulose, the so-called triacetylcellulose[3]. Cellulose, as has been set forth in another place[4], is a polymerized form of cellobiose. In this cellobiose-anhydride, the hydroxyl group 1 of cellobiose (IX) must be linked with some one of the remaining seven hydroxyl groups:



IX

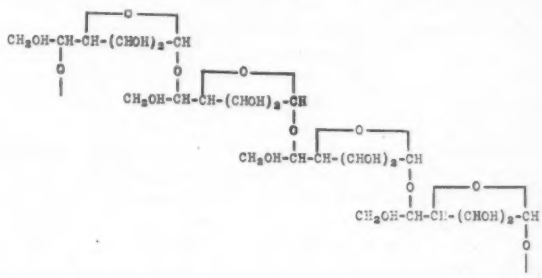
We obtained from acetylated cellulose, after treatment with phosphorus pentabromide, aceto-l, 6-dibromoglucose, but no aceto-l-bromoglucose. If we accept the view that cellulose is a polymerized form of anhydrocellobiose, this fact is very clear and convincing: The oxygen bridge in cellobiose anhydride can be only from 1 to 12, for it is only under these conditions that aceto-l-bromoglucose will not be found in the reaction product and that aceto-l, 6-dibromoglucose will be present. The formula of cellobiose anhydride, which we term cellosan, and which is the parent substance of cellulose, is therefore as follows:

[3] Ost, Z. angew. Chem. 1919, 67.
[4] Cellulosechemie 2, 125 (1921).

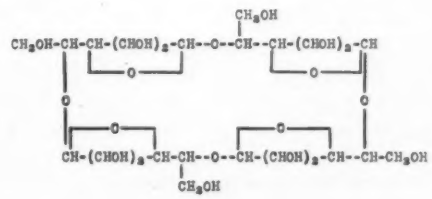


X

The occurrence of aceto-l, 6-dibromoglucose in the reaction products with phosphorus pentabromide is also an excellent support for the conception that cellulose consists of polymerized cellobiose anhydride. If we write cellulose as a chain of cellobiose complexes:



or, if, as has also been proposed, as two cellobiose complexes united as a ring:



the occurrence of aceto-l, 6-dibromoglucose in the reaction under discussion is impossible. This follows because the 6-position of the glucose residue is acetylated, and further, because the 5-position does not carry an acetyl residue—two reasons which oppose the formation of aceto-l, 6-dibromoglucose.

Therefore, from our point of view, the conclusion is unavoidable that cellulose is polymerized cellosan (cellobiose anhydride), and is represented by formula X.

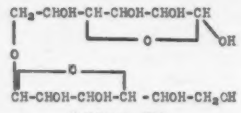
In this connection we may again point out the very characteristic difference in behavior of acetylated cellobiose and acetylated cellulose towards phosphorus pentabromide; from the former one obtains aceto-l-bromoglucose, but no aceto-l, 6-dibromoglucose; from the latter aceto-l, 6-dibromoglucose, but no aceto-l-bromoglucose; we connect this difference in behavior to their constitutional differences.

The cellosan formula X explains equally well the occurrence of 2, 3, 6-trimethylglucose upon hydrolysis of the methylated cellulose. It also explains why tetramethylglucose cannot be obtained in this reaction.

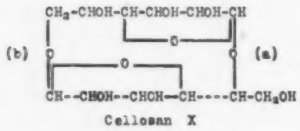
It also leads to still further conclusions.

It is easily seen from this formula *that cellosan, the anhydrosugar which is the basis of cellulose, can be considered not only the anhydride of cellobiose (XI), but also that of maltose (XII) (or isomaltose)*[5].

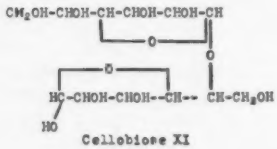
[5] The question whether maltose or the stereoisomeric isomaltose is present cannot be definitely answered; however maltose groupings are more probable for various reasons.



Maltose XII



Cellosan X



Cellobiose XI

Cellobiose or maltose (isomaltose) will be formed, depending upon which of the two glucosdic linkings is broken open.

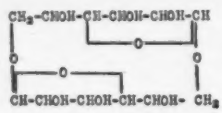
Up to the present time maltose has not been obtained in the hydrolysis of cellulose. This is easily understood. Maltose is so sensitive to acid that it can scarcely be obtained pure by the acid hydrolysis of starch; enzymes are used in its preparation from starch. In the case of cellulose it is known to be necessary to use much more energetic conditions of hydrolysis in order to obtain reducing sugars; if one uses acetolysis, a part of the cellobiose is obtained as the acetate; the maltose that is formed must, because of its greater lability, be decomposed in this process. From this we understand very well why it has been impossible to isolate more than 40 to 43 per cent of cellobiose acetate, and why, even when the octaacetyl-cellobiose which may be decomposed in the reaction is included, only 50 to 60 per cent of cellobiose can be determined in cellulose[6]; the decomposition of the cellulose molecule takes place at both glucosidic linkings *a* and *b*, perhaps somewhat more rapidly at *b* than at *a*; thus cellobiose and maltose are formed simultaneously, of which the former may be recovered in part, while the latter is destroyed. Even the acetyl bromide decomposition, as has been shown before[7], demands such energetic conditions of reaction that acetobromomaltose is not formed; the reaction must either take place at 40-50° or such a large amount of acetic acid and such a long reaction time must be employed in the acetyl bromide degradation that the acetobromomaltose which is probably formed cannot be recovered. Furthermore, the yield of the much more stable acetobromocellobiose is, in all cases, very poor.

The isolation of aceto-l, 6-dibromoglucose from acetylated cellulose is still a further proof of the presence of the maltose (or isomaltose) grouping in cellulose. These compounds can, in general, only result when the cellobiose and maltose complexes alternate in the acetylated cellulose. Adherents of the chain formula will perhaps reply that the chain can consist of alternately linked cellobiose and maltose complexes, which would also permit of the formation of aceto-l, 6-dibromoglucose. We have, however, no grounds on which to base doubts concerning the well-founded anhydride formula of cellulose.

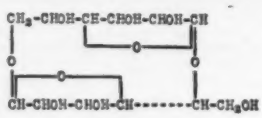
Now that the formula for cellosan, the fundamental compound of cellulose, is known, we may return to diamylose, the basic compound of starch. It has been shown above that the oxygen bridge, which starts at 1, can lead only to 8, 9, 11, or 12. The position 1-11 is now excluded, for this would make the compound identical with cellosan. Of the positions 1-8, 1-9, and 1-12, we believe that only the last can be considered (XIII), for this also explains satisfactorily the properties of diamylose and starch.

[6] Karrer and Widmer, Helvetica Chim. Acta 4, 174 (1921); K. Freudenberg, Berichte 54, 767 (1921).

[7] Helvetica Chim. Acta 4, 700 (1921).



Diamylose XIII



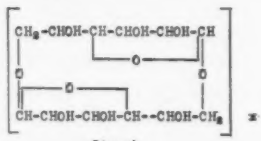
Cellosan

In the first place this indicates why 100 per cent maltose can be obtained from diamylose (and starch); for no matter at which of the two glucosidic linkings decomposition begins, maltose must result in both cases[8]. (That the behavior is otherwise in the case of cellosan has been discussed above.) This diamylose formula also satisfactorily explains why diamylose and starch are more easily hydrolyzed than cellulose; in diamylose the glucosidic formation is between two primary alcohol groups, while in cellulose one glucosidic linking is through a secondary alcohol group. It is also possible that steric causes have an influence upon the stability of the two ring sugars[9].

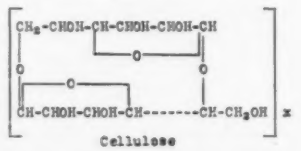
An uncommonly clear and wonderfully simple principle of plant carbohydrate synthesis follows:

The basic compound of starch (and glycogen) and of cellulose is maltose. Anhydride formation between the hydroxyls 1-12 of the maltose molecule leads to diamylose, the basis substance of starch; anhydride formation between the hydroxyl groups 1-11 leads to cellosan, the basic unit of cellulose. Starch is a polymerized condition of diamylose, while cellulose is a polymerized cellosan. In the same way that, through the simple arrangement of several amino acids in the protein molecule of organisms, protein substances are produced which are no longer subject to attack by enzymes and therefore find use as structural protein materials, so, in the plant, one method of anhydride formation will transform maltose into reserve material (starch, glycogen), while another yields the structural substance, cellulose. We see in this a new example of how nature, working with simple materials, is capable of bringing about serviceable variations.

The formulas of starch and cellulose, neglecting the question of configurations, are to be written as follows:



Starch



Cellulose

The only point in this that is not sufficiently cleared up is the degree of polymerization; this is not due to the lack of observations by many investigators. The only positive statement that we can make is that it is not very high.

In the general discussion of the phosphorus pentabromide decomposition of the acetated disaccharides and anhydrosugars, the first comment is that it does not proceed smoothly. There is always formed a considerable amount of oily, non-crystalline products, which increase with the time of reaction of the pentabromide and make very difficult the crystallization of the aceto-l-bromoglucose and aceto-1, 6-dibromoglucose. This oil contains the isomeric

[8] If only one of the glucosidic linkings was α, while the other was β-glucosidic, isomaltose could also result under certain conditions. The question as to whether isomaltose can be a primary product in the decomposition of starch has received much attention but has not been settled. We will return to this question of configuration in a later article.

[9] A similar difference in stability exists between cellobiose and maltose.

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acetodibromoglucoses, bromination products of the original disaccharide complex, decomposition products, and probably compounds brominated in the acetyl residue, which may be analogous to the recently described 1-chloro-2-(trichloroacetyl)-3, 5, 6-triacetylglucose[10].

It is due to their great tendency to crystallize that it is possible to isolate aceto-1-bromoglucose and aceto-1, 6-dibromoglucose even under the most favorable conditions. A considerable portion of these compounds is retained in the oil. The best conditions for their isolation consists in dissolving the crude product in a little ether, adding ligroin until the greater part of the oil is precipitated, filtering the ether-ligroin mixture and concentrating the filtered solution very slowly. Under these conditions, the aceto-1, 6-dibromoglucose or the aceto-1-bromoglucose separates. The oily product precipitated from the ether by the addition of ligroin is again dissolved in ether, separated into fractions by ligroin and the fractionation continued in the same manner.

In this way it is very easy to isolate aceto-1, 6-dibromoglucose from acetylated diamylose, starch and cellulose, that is, in those cases where aceto-1-bromoglucose is not formed. Likewise it is very simple to obtain pure aceto-1-bromoglucose from acetylated glucose and acetylated cellobiose, that is, where no aceto-1, 6-dibromoglucose results. It is more difficult to identify aceto-1, 6-dibromoglucose in the presence of aceto-1-bromoglucose, as is necessary in the decomposition of acetylated maltose, and in those cases where aceto-1, 6-dibromoglucose was purposely added to pentacetylglucose with the object of testing the methods employed. Still, as the result of numerous experiments we have reached the conclusion that, under the experimental conditions described above, the acetoxyl group in the 6 position in acetylglucose is not replaced, or only very slightly, by bromine, for in all experiments carried out with pentaacetylglucose and phosphorus pentabromide it was impossible to detect aceto-1, 6-dibromoglucose, while in all experiments in which 5 per cent of acetodibromoglucose were added, it was possible to detect its presence, as well as in two experiments with acetylated maltose. Finally it may again be recalled that the above formulas for diamylose, starch and cellosan are not based alone upon the formation of aceto-1, 6-dibromoglucose but also upon the absence of the easily identified aceto-1-bromoglucose and that the maltose union in cellosan appears to be established because under the supposition of only cellobiose groupings in cellulose, position 5 in the cellulose molecule is not acetylated and aceto-1, 6-dibromoglucose could not be formed.

The experimental work, describing the action of phosphorus pentabromide upon pentacetyglucose, octaacetyl-cellobiose, octaacetylmaltose and acetylated diamylose, starch and cellulose is not reproduced here.

[10] Brigl, Z. physiol. Chem. 116, 1 (1922).

THE APPLICATION OF RECORDING INSTRUMENTS TO PULP AND PAPER MILLS*

By L. G. Bean, of the Bristol Company, Waterbury, Conn.

Recording instruments have been in commercial use on varied manufacturing processes for some thirty years, but not until comparatively recent time have their full advantage and great helpfulness in the manufacture of pulp and paper been appreciated. The increased use of chemical control and modern methods have eliminated many hit and miss practices and substituted in their place methods based on definite knowledge of the qualities and conditions entering into any operation. The object of the recording instrument is to place this knowledge in its most desirable form before all parties concerned. The fact that any variable quantities may be registered in graphic form gives to this type of instrument the following two distinct advantages over any ordinary indicating instrument:

1. Recording instruments furnish the operator of any process with an accurate guide as to just what rate and to what extent any change in the process is taking place.

2. Recording instruments furnish a filable record of the varying conditions which enter into the process and serve as a check in the hands of the management to see that the best operating conditions are maintained.

Applicable to all Processes

Recording instruments are applicable to practically all processes for the measurement and recording of pressure, temperature, humidity, speed, liquid level, motion, flow, time and electricity. These instruments are furnished in numerous forms and cases, but the type of instrument of most general use in pulp and paper mills for recording any of the above qualities is that as shown in the illustrations. This standard rectangular case of cast iron is both moisture and fume proof, and when opened the entire mechanism is exposed to view and inspection. Charts are thus easily changed and this type of case offers the great advantage of the long pen-arm which it is not possible to use in the so-called "round form" models. To mention all of the uses to which these instruments are being put at present in the pulp and paper mills would be impossible, but the following will give some of the more common applications to which they are adapted in the different types of pulp and paper plants. The fact that one large pulp company has nearly a thousand of these recorders in actual operation shows their universal application.

In Mechanical Pulp or Ground Wood Mills

In ground wood mills the character of the pulp produced depends largely upon the speed of the stones and the pressure of the wood against the stones. The careful observation of the two components, speed and pressure, as given by a recording tachometer and recording pressure gauge, will insure a most even quality of pulp. One eastern mill has thirty-six of its grinders equipped in this manner, which is especially to be recommended when water power is used. If the grinders are motor driven, then recording wattmeters are to be recommended in place of tachometers and the grinder men instructed to operate their machines between a given limit on both the pressure and wattmeter charts. Recording thermometers should then be installed with the sensitive bulbs immersed in the ground wood from each stone. If the pulp is ground too cold, small bundles of fibers result instead of single fibers and consequently poor felting qualities; if the pulp is ground too hot, then a worthless flour pulp results as well as excessive wear on the stones. One hundred and forty degrees is a good average for this work and a recorder with a range of 20° to 180° is to be generally recommended. The bleaching instruments will be considered separately.

In the Sulphite Process

In the sulphite process recording instruments find a most varied application. Undoubtedly, the most important use here is in connection with the digesters. Each digester of any modern plant should be equipped with a recording pressure gauge and recording thermometer. The thermometers generally utilize a chart with a range of approximately 140° to 330° F. Charts calibrated in degrees centigrade, with about the corresponding range have been used to considerable extent by many of the western plants. The

*Read at the meeting of the Technical Association of the Pulp and Paper Industry at the National Exposition of Chemical Industries, Grand Central Palace, New York, September 11-16, 1922.

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thermometer used here should be either of the so-termed "vapor tension type" or "gas filled type." Mercury filled instruments are not well adapted to this use as they are frequently affected by temperature changes along through the wall of the digester and held tight by means of a nut and washer on the outside of the digester. A fixture designed for this purpose has met with most general approval in digester plants, in that it is easily installed and allows the sensitive bulb to be withdrawn for testing without interfering with the operation of the digester. Recording pressure gauges used on such apparatus are furnished with an oil seal filled with glycerine or some other non-active agent to prevent the fumes from the digester attacking the interior of the instrument.

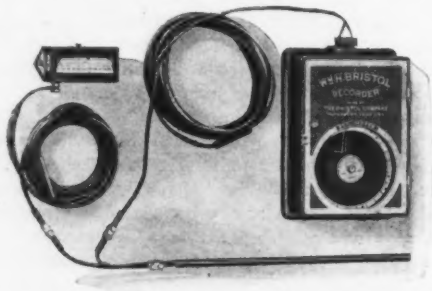
A common method of operating digesters is for the operator to be furnished with charts which have been marked by means of a template with the curve showing the rate at which the temperature and pressure in the digester is to be raised. The operator then has only to make the red lines of the instrument pen follow the pencil line drawn on the chart, and a uniform and proper cook will result. Such a method also prevents the burning of the chips, which often occurs if the process is carried too fast. Twelve-hour charts are often used in the "short cook" process with the consequent open time division, although the twenty-four hour charts are more satisfactory for most operations.

In the making of sulphurous acid used in the sulphite plants, recorders are used to great advantage. The sulphur burners are generally equipped with recording pyrometers and the proper record on these instruments assures the superintendent that overheating is not taking place, together with the attending sublimation. The most economical use of sulphur will result if the burning temperature is kept at the proper point for correct combustion. The

instruments used here are generally combination indicators and recorders, and have a scale range of 1100° C. Since the best temperature for the formation of H_2SO_4 is from 200° to 900° C., and as this is not desired, the gas (SO_2) should be produced at as high a temperature as possible, and then cooled as rapidly as possible in the coolers, so that the ranges are favorable to the production of H_2SO_4 should be avoided. Recording thermometers in the coolers will guard this point most efficiently and prevent the formation of gypsum. Recording thermometers should then be installed in the absorption system as well as in the coolers and towers of the reclaiming system. All these will help to produce an even quality acid as the effect of temperature on acid is very marked. Cold water should be used in all towers of reclaiming systems and carefully watched by recorders.

In the Soda, Sulphate and Kraft Processes

Since these processes are much the same as far as the instrument needs are concerned, we will consider them collectively. On the digesters here similar thermometers and gauges are used, except in place of the bronze fittings employed for the sensitive bulbs on



the thermometers, steel fittings are used. Recording thermometers and vacuum gauges are then used to control the recovery process. In soda pulp plants particularly, they play an important part when multiple evaporators are used. Sugar plants have made use of this method for years and it has now become good practice in soda pulp liquor recovery, giving a highly efficient method of control. Specific gravity recorders have also been employed in recovery systems and consist really of a float arrangement attached to the recorder pen and reading direct in degrees Baume. In the causticizing plants temperature recorders guard the process and a temperature of about 95° C. is generally maintained in such systems as the Dorr. These recorders help to keep a high percentage of recovery. This also applies to the case of sulphate mills when the success of the mill often depends upon the chemical control of the recovery process.

In Bleaching Plants

The bleaching plants of all mills is another department in which recorders have been quite generally installed. In the first place, bleaching powder should be kept cool and dry, and this point is carefully watched by recorders. In the mixing, the temperature would not be allowed to exceed about 70° F., or the resulting bleach will be still better if this temperature is kept even lower. During the bleaching process itself, the chlorination of the fiber of the stock must be carefully watched out for, for if the stock runs much above 115° F. this action is liable to take place in spots if not throughout, with its consequent danger. Recording thermometers, the bulbs of which are in the stock, guard the operator against this trouble and tell him when his temperature is approaching the danger limit.

Since the time allowed for bleaching depends upon the temperature and density, it is desirable to record both of these quantities, particularly the former, which is readily done. This temperature may be made to accelerate the chemical action between the chlorine and the coloring matter and hence should be carefully watched and checked by a recorder. In plants making their own chlorine by the electrolytic method recording ammeters give an excellent check in the process. We may now turn to the finishing of the paper.

In the Beater Room

In the beater room, recorders are used frequently to show the position of the rolls of the beaters and also at just what time their position was changed. This employs a mechanical time recorder of simple construction, which has been used with good

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results. On hydraulicly operated beaters recording pressure gauges will give the pressure on the lighter bars and roll, while if the beaters are electrically driven, recording wattmeters will record the load upon the same. This last method is being used considerably of late by a few progressive mills and very good results have been obtained by adjusting the beater so that it consumes power only between certain limits, depending upon the type of pulp desired. This same means of recorder control has been applied to Jordans as well as ordinary beaters. Liquid level gauges are also used in the beater room considerably, both on beaters and stuff chests and give, when used with a constant, an accurate measurement of the stock between or drawn off.

In the Machine Room

As applied to paper machines, recording thermometers are used to record the temperature existing in the drying rolls and pressure gauges give similar information with regards to the pressure or vacuum existing in the different sections of the machine. A special thermometer fixture in which the sensitive bulb has been inserted through a journal bearing has been designed to give particularly quick and sensitive readings of the dryer roll temperatures and has greatly improved the drying process in some large mills. A contact thermocouple and pyrometer have also been used to good advantage in obtaining the actual surface temperatures of the calender rolls. At the wet end of the machine a recording pressure gauge should be applied to keep the press rolls pressure as near even as possible.

The speed of the paper through the machine has long been an important factor and this is best recorded by means of an electric tachometer, the magneto of which is attached to the spring roll of the machine. This gives an accurate record in feet per minute of the paper through the machine and will show clearly the time and interval during which the machine was down for a "break" or repairs. The electric tachometer recorder may be placed any desired distance from its magneto fixture. Electric time recorders

have also been used for this purpose with good success, but tachometers are generally more useful.

In Fine Paper Plants

In the fine paper plants where the paper is treated with various sized recording thermometers are utilized to keep this solution at its proper temperature and consistency. A similar use for recorders is found in plants making waxed papers. Fine papers, when being seasoned, are often subjected to very carefully regulated temperature and humidity conditions and recording psychrometers are the best means of keeping the conditions under complete control as desired, while the paper is drying out. There are many other uses in plants auxiliary to the ordinary paper mill and chief among these is the steam power plant. Here recorders are used on the usual applications, such as feed water temperatures, boiler pressures, flue gas temperatures, draft gauges, etc., but it may be well in concluding to make mention of the new long distance electric transmission system. This is used to convey pressure, temperature, liquid level, or any other reading over any distance up to several miles. In pulp mills particularly, it enables the fireman or engineer to control the pressure to the digester house or any

other part of his system from the end of the line, rather than from the boiler plant. Consequently, an even pressure at the desired point is held throughout the system. The instruments work on a balanced induction circuit principle and is thus unaffected by normal changes in line voltage or frequency.

We have now covered most of the more general uses of recorders in pulp and paper mills, but there are many other applications which individual plants have found most profitable. New needs are always arising and it is only by careful co-operation of the manufacturers of recording instruments and the users, that the best instruments for the work can be installed and the most efficient results obtained.

Throughout the entire paper mills process, from the grinder rolls to the seasoning of fine papers, the recording instrument has already come to play a most helpful part. Ever on the watch, and never sleeping, these recorders serve as silent sentinels in their dual roles of a guide for the operator and a check to the superintendent. That is why the recording instrument has come to be used so extensively in the pulp and paper industry.

Sturtevant Co. Issues New Catalogue

A new 44 page catalog No. 295 on air washers has just been issued by the B. F. Sturtevant Company of Hyde Park, Boston, Mass. It is profusely illustrated and shows the various details of construction by which the air for any building or for any industry is thoroughly washed and tempered before entering the building. The motors and pumps are also described and illustrated. Installations are shown in a city hall, a chocolate factory, a customs house, a theatre as well as other types of buildings.

More than twelve pages are devoted to various tables giving dimensions, psychrometric charts, diagrams, relative humidities and other useful data.

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CURRENT PAPER TRADE LITERATURE

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts of Literature of the Technical Association of the Pulp and Paper Industry

How to Obtain Abstracted Papers

WASHINGTON, D. C., Sept. 29, 1922,

EDITOR, PAPER TRADE JOURNAL:

In connection with your editorial of August 17, 1922, entitled, "How to obtain Abstracted Papers," I would like to add the comment that the Chairman of the Committee on Bibliography, whose address is 1701 Massachusetts avenue, Washington, D. C., has on file a practically complete set of American and foreign publications devoted to the pulp and paper industry since January 1, 1922. These publications are for the use of the industry and it is hoped that the individual members of the Technical Association and any others interested in periodical literature will write the Chairman of the Committee on Bibliography when in need of such material.

In case the original magazine is not on file, it is possible, in practically all cases, to obtain such material through the libraries of the District of Columbia and photostat copies will be prepared at cost. It is felt that this will be much more advantageous and cheaper than attempting to write to the magazines in which the articles appeared. This will be especially true in the case of foreign periodicals.

The chairman is also willing to secure copies of patents. In the case of American patents, the cost will be 10 cents for each patent plus postage. In the case of foreign patents, the cost will depend upon the length of the patent because, in most cases, photostat copies will have to be prepared.

The chairman of the committee is glad to announce that several people have taken advantage of this offer, which was made at the spring meeting of the Technical Association, and he hopes that this feature of the committee's work will be used more and more by the members of the Technical Association.

C. J. WEST, Chairman, Committee on Bibliography.

Properties, Chemistry and Testing of Raw Materials and Finished Products

Araucaria as Raw Material for Paper Pulp.—Cecil Laurell. *Svensk Pappers-Tid,* xxiv, 357-358 (1921); *Chem. Abs.,* xvi, 830 (March 10, 1922).—The author made kraft pulp in Australia from *Araucaria Bidwilli* and *A. Cunninghami.* The fibers are long but need hard cooking and much chemicals. Young trees of *A. Brasiliensis* are better than old trees. They make a strong sulphite. The older trees make a much darker pulp.—A. P.-C.

Determination of the Degree of Lignification (Lignin) in Pulp and Wood.—Rudolf Sieber. *Zellstoff u. Papier,* i, 223-6 (1921). Translation by C. J. West in PAPER TRADE J., lxxiv, No. 3, 54, 56 (Jan. 19, 1922).—Because of the expense of the determination of the methyl number, the author investigated lignin determinations with a view to substituting this for the methyl number. Study of Becker's, Willstätter's and Fellenberg's methods indicated that the last may be considered as a substitute for the methyl number determination for the present. Certain suggestions are made about carrying out the test.—A. P.-C.

Formation of Oxalic Acid from Sulphite Waste Liquor and from Lignin.—Emil Heuser, H. Roesch, and L. Gunkel.—*Cellulosechem,* ii, 13-19 (1921); *Chem. Abs.,* xv, 2983 (Sept. 10, 1921). Lignin free from carbohydrates produced no oxalic acid on fusion with potassium hydroxide up to 270° C.; sulphite waste liquor under similar conditions often yields oxalic acid, owing to the presence of cellulose and other carbohydrates. Oxidation of lignin with fuming nitric acid gave yields of oxalic acid up to 25 per cent (20 per cent actually isolated); addition of small amounts of ferrous sulphate or of mercurous sulphate or ammonium vanadate reduced the yield and the use of a mixture of nitric and sulphuric acids produced no oxalic acid, doubtless owing to the action of sulphuric acid. On heating 3 g. of lignin with 60 cc. of 25 per cent nitric acid for four hours at 80 to 90°, a clear solution was obtained from which 0.13 g. of oxalic acid was isolated; the yield was increased to over 17 per cent by the addition of 0.01 g. of ferrous or mercurous sulphate but larger amounts of these catalysts acted less favorably.—A. P.-C.

The Formation of Oxalic Acid from Lignin.—E. Heuser and A. Winsvold. *Cellulosechem,* ii, 113 (1921); *J. Soc. Chem. Ind.,* xl, 869A (Dec. 15, 1921).—When 4 g. of lignin are heated with 50 g. of potassium hydroxide for 40 minutes at 280° C. a 20 per cent yield of oxalic acid is obtained.—A. P.-C.

Methylation of Lignin.—E. Heuser, R. Schmitt, and L. Gunkel. *Cellulosechem,* ii, 81-86 (1921); *Chem. Abs.,* xvi, 490 (Feb. 10, 1922).—Lignin, containing 14.65 per cent methoxy, treated with methyl sulphate gave a methyllignin with 26.29 per cent of methoxy.—A. P.-C.

Constitution of the Lignin of Fir Wood.—P. Klason. *Svensk Kem. Tidskr.,* xxiv, 4-17 (1922); *J. Soc. Chem. Ind.,* xli, 627A (Aug. 31, 1922).—The calcium salt of alpha-ligninsulphonic acid was prepared by treating sulphite waste liquor with calcium chloride. Waste liquor was also precipitated in three separate fractions with sodium chloride and the betanaphthylamine salts prepared from the three fractions and from the residual liquor were substantially identical, corresponding with the formula $C_{20}H_{20}O_6+H_2SO_3+C_{10}H_7NH_2$. Several derivatives of alphalignin-sulphonic acid were prepared and studied, from which it is concluded that alpha-lignin is a definite uniform substance containing a coniferyl aldehyde nucleus, a flavone or coumarone ring, and an acrolein complex.—A. P.-C.

Ligninsulphonic Acid and Lignin. (Preparation of Electrodes for Accumulators from Sulphite Waste Liquors).—F. Konig. *Cellulosechem,* ii, 93-101, 105-113, 117-122 (1921); *J. Soc. Chem. Ind.,* xli, 9A (Jan. 16, 1922).—Neutralized concentrated sulphite waste liquor was sprayed into 50 per cent sulphuric acid through a fine jet, the quantities being chosen so that the final acid had a concentration of 360 g. per l. The precipitated ligninsulphonic acid was redissolved and reprecipitated in the same way, then neutralized with barium carbonate and the solution of barium salt poured into ten times its volume of alcohol. The barium ligninsulphonate had a composition corresponding with the formula $C_{40}H40O_{17}S_2Ba$. The chemical properties of the barium salt thus prepared, and also of the free acid, are described. It is suggested that sulphite waste liquor, in the form of barium ligninsulphonate, be used for the preparation of positive electrodes for accumulator cells. The concentrated waste liquor is precipitated with sodium bisulphate solution and the precipitated acid neutralized and dissolved with barium carbonate, or, more economically, with chalk. Good deposits are obtained in an electrolyte containing 24 g. of sulphuric acid per liter and the equivalent of 0.5 per cent of barium ligninsulphonate with a current density of 1.5 milliampere per sq. cm.—A. P.-C.

Determining the Quality of Pulp from Its Lignin Content.—Hans Krull. *Papierfabr.,* xix, Fest-u. Ausland Heft, 65-70 (1921); *Chem. Abs.,* xv, 2983 (Sept. 10, 1921).—For Mitscherlich pulp the following relations are given: 6.5-7 per cent lignin, hard; 5.5-6 per cent, normal; 5.5-' per cent, soft; 1.0-2.0 per cent bleached. For

Ritter-Kellner pulp: 7.5-9.5 per cent lignin, hard; 6.5-7.5 per cent, normal; 4.5-6.5 per cent, soft.—A. P.-C.

Bamboo By-Products.—Sindall and Bacon. *Paper Makers' Monthly J.*, lix, 189, 191 (1921); *Chem. Abs.*, xv, 2985 (Sept. 10, 1921).—A discussion of the Rinman process as applied to bamboo waste liquor. The estimated by-products, based on a 10,000 tons air-dry pulp mill, are methyl alcohol 388,000 kilos, acetone 330,000 kilos, ethyl-methyl-ketone 220,000 kilos, light oil (gasoline) 220,000 kilos, heavy oils (Diesel engine) 572,000 kilos. These amount to nearly 10 per cent calculated on the original raw bamboo.

Straw Pulp as a Substitute for Groundwood for News Print.—Walter Clifford, Hummel-Ross Fibre Corporation. *Paper Ind.*, iii, 1105-1106, (Nov., 1921).—The author briefly indicates the necessity of finding a substitute for wood for the manufacture of news print, shows the advantages of straw for the purpose, and also the reasons which have prevented its use up till now. He then describes a modified sulphate process suitable for the purpose. It consists essentially in using a liquor of about 12° Bé in which the per cent of caustic is only about one-half the per cent of sulphide (e. g., Na_2S 25 per cent, NaOH 12.5 per cent, Na_2CO_3 62.5 per cent), and cooking about two hours in the same way as in the usual sulphate process. After cooking the pulp is washed, bleached with about 3 per cent of bleaching powder, washed again, beaten a short time, and sent to the machine. No screening is required. The yield is about 65 to 70 per cent, and the news print can be made entirely from straw.—A. P.-C.

Groundwood and Waste Paper in the Manufacture of Paper.—E. Arnould. *Papier*, xxiv, 48 (Feb., 1921). Translation by A. Papineau-Couture in *Paper Ind.*, iv, 529-531 (July, 1922).—See this journal, lxxiii, No. 12, 50, Sept. 22, 1921.—A. P.-C.

Use of Lime in Soda and Sulphate Pulp Manufacture.—G. K. Spence, New York and Pennsylvania Co. *Paper Mill*, xlv, No. 24, 2, 48 (June 24, 1922). *Paper*, xxx, No. 19, 7-9 (July 12, 1922). *Pulp and Paper*, xx, 807-809 (Sept. 21, 1922).—A brief description of present day practice in causticizing with a plea for closer cooperation between lime manufacturers and pulp makers.—A. P.-C.

Accuracy Required in Passing from Ream Weight to Weight Per Unit Area and Conversely. H. Micoud. *Mon. Papeterie Française*, liii, 243-246 (May 15, 1922). Owing to conditions inherent to the process of papermaking to which are due the allowances recognized by all paper trade codes, the variations in weight which are bound to occur render absolutely meaningless the use of a second decimal in expressing ream weight. For small sizes and light weights, the first decimal may be retained; but for the larger sizes and heavier weights the significance of the units or even tens digits may be questionable. The prescribed ream weight is really only the average of limiting values between which the actual weight must fall. By applying the theory of "dispersion," used in ballistics, the author shows that in the great majority of cases the actual values fall close to this mean, while in relatively few cases does it come very near the limits.—A. P.-C.

Relation Between Ream Weight and Weight Per Unit Area. H. Micoud. *Mon. Papeterie Française*, liii, 149-150, 168-170 (March 15 and April 1, 1922). The author briefly discusses the tables and special calculators devised for passing directly from ream weight to weight per unit area, and vice versa, and shows that the simplest, quickest and most convenient method is the use of the slide-rule.—A.P.-C.

Adhesive from Sulphite Waste Liquor. Berliner Dextrin Fabrik Otto Kutzner. Ger. patent 353,129.—The concentrated liquor is mixed with sodium thiosulphate and an acid (preferably sulphuric) to precipitate colloidal sulphur and at the same time eliminate the bad odor; e. g., 100 g. of liquor of 38 to 39° Bé are heated to 40° C., 5 g. of sodium thiosulphate are added with constant stirring, and when dissolved 5 g. of sulphuric acid are added. The color of the mixture clears up at once, a good adhesive being obtained.—I. G.

Use of Sulphite Waste Liquor for the Preparation of Paper Size. A. Kumpfmiller. Ger. patent 355,813. Coumarone resins are rendered soluble or easily emulsifiable by mixing with sulphite waste liquor of over 30° Bé. The mixture is directly soluble in water without further treatment, forming a pseudo-solution or a very stable emulsion from which the resin will not settle out. Sizing is carried out in the usual manner.—I. G.

Process for the Manufacture of Paper Pulp from Cordage, Twine, Etc. A. Boileau. Addition to Fr. patent 506,569. (See this journal, lxxii, No. 11, p. 50, March 10, 1921.) *Mon. Papeterie Française*, liii, 101-103 (Feb. 15, 1922). The process is applicable to the treatment of flax, hemp, jute, or phormium tows, even when containing tar, to waterproofed or painted fabrics, to dirty linters, and other such materials generally considered unfit for paper making. It gives clean white pulps.—A. P.-C.

Alkaline Processes of Pulp Manufacture and Equipment. Process of Pulp Manufacture. Badische Anilin Und Soda Fabrik. Ger. patent 331,950. Wood, straw, and other analogous materials are treated alternately with alkalies and with carbonic acid. The treatment is repeated one or more times.—I. G.

Pulp Treatment and Drying. Operation and Equipment. Pulp Thickener. C. H. Allen and Great Northern Paper Co. Can. patent 222,034 (Aug. 8, 1922). A filtering drum of (preferably) polygonal cross section rotates at about 12 revolutions per minute within a casing practically filled with slush pulp, so that the drum is completely submerged. The casing is connected to a head box to maintain a constant head in the casing. A discharge opening in the casing is provided at one side of the drum, the clearance between the drum and casing being sufficient to let the layer of thickened pulp adhering to the screen pass by, the latter preventing the slush pulp from escaping.—A. P.-C.

Wet Machine. Aktiebolaget Karlstads Mekaniska Verkstad. Ger. patent 355,448. One or more pressure rolls having circumferential grooves work in conjunction with the cylinder mold to increase the dehydrating action of the latter.—I. G.

Bleaching, Bleach Manufacturing and Equipment

The Different Methods of Bleaching Paper Pulp. Raffaele Sansone. *Papoterie*, xliv, 158-162 (Feb. 25, 1922); 258-259 (March 25, 1922); 342-346 (April 25, 1922); 541-546 (June 25, 1922). A general description.—A. P.-C.

Paper Manufacturing and Equipment

Recovering Fiber from Paper Board. M. F. Williams. U. S. A. Patent 1,417,961, May 30, 1922. Paper board and similar materials are shredded and treated with an air blast to recover the fiber.—I. G.

De-inking Waste Paper By Means of Bentonite. H. R. Eyrich and J. A. Schreiber, assignors to Paper Deinking Co. Can. patent 222,060 (Aug. 8, 1922). Also U. S. A. patent 1,421,195, June 27, 1922. The stock is treated (e. g., in a beater) with an alkali, in the presence of bentonite, washed thoroughly, and neutralized if necessary. It is then ready to be reconverted into paper. Two formulas given as examples are: 300 lb. bentonite, 200 lb. soda ash and 8,000 gallons of water per ton of waste news print; and 150 lb. bentonite, 32 lb. soda ash, 20 lb. lime and 8,000 gallons of water per ton of news print.—A. P.-C.

De-inking Old Newspapers By Means of Bentonite. Sidney D. Wells, Forest Products Lab., Madison, Wis. *Paper*, xxx, No. 14, 7-10 (June 7, 1922); *Paper Trade J.*, lxxiv, No. 25, 47-50 (June 22, 1922); *Paper Ind.*, iv, 555-559 (July, 1922); *Pulp and Paper*, xx, 599-602 (July 20, 1922). Compare preceding abstract). A detailed account is given of experiments carried out on a semi-commercial scale, and of mill-scale tests carried out at the Watab

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Paper Co. The laboratory runs indicated that used news, book, or bond paper could be satisfactorily washed with the help of bentonite and used in making the same type of paper. The average loss was 9 to 10 per cent. In the mill runs it was found that greatly improved results were obtained by using a specially constructed screen washer (described in detail) after the Jones four-drum washer. The proportions of chemicals finally adopted for continuous operation were: Old newspaper stock 2,500 lb., bentonite 200 lb., soda ash 40 lb., hydrated lime 25 lb.—A. P.-C.

Heating of Paper Stuff. *Wochbl. Papierfabr.*, liii, 1626-1628 (1921). A discussion of the causes of heating and of its influence on the sizing and strength of the paper.—I. G.

Coloring of Paper. H. Dierdorf. *Wochbl. Papierfabr.*, liii, 1624-1626, 1816-1819 (1921). A description of the methods of coloring all sorts of papers, the conditions under which coloring is carried out, the effects of different raw materials, the effect of sizing, etc.—I. G.

Calculating the Efficiency of Dryers. F. Strauch, *Papierfabr.*, xx, Fest u. Auslandheft, 56-66 (1922). A detailed mathematical discussion of the method of determining the steam consumption per kilo of paper. The calculations, which are very extensive, are arranged in tabular form. Curves are also given.—I. G.

Method of Controlling the Draining of Water Through a Paper Machine Wire. J. R. Buchanan. Can. Patent 222,068, Aug. 8, 1922. To prevent too rapid draining of the water when the stock first comes on to the wire, an auxiliary wire is provided under a portion of the main wire near the breast roll. The effect is the same as if the mesh of the wire were finer near the breast roll than at the suction boxes.—A. P.-C.

Rubber Jacketed Press Rolls. *Mon. Papeterie Française*, liii, 344-345 (July 15, 1922). Brief description of the method of making rubber jacketed press rolls.—A. P.-C.

Method of Felting Fibers on Paper Machines. J. W. Brassington, assignor to Port Arthur Shipbuilding Co. Can. patent 222,005, Aug. 8, 1922. The wire passes around a suction roll partly immersed in a vat containing pulp and equipped with a suitable number of agitators under the roll. The suction box in the roll can be turned either directly downward toward the agitators or at any suitable angle, according to the character and thickness of sheet desired. Means are provided for adjusting the width of the sheet. It is claimed that the strength in the cross direction is practically equal to that in the machine direction.—A. P.-C.

Control of Causticizing Lime By Determining Active CaO Content.—G. K. Spence. *Paper Ind.*, iii, 1095-1097 (Nov., 1921). —After briefly dwelling on the necessity of chemical control of causticizing lime, the author describes and recommends the following method which he has used for several years and which checks actual mill conditions very closely. Weigh 50 g. of coarsely-powdered lime into a crystallizing dish 3.5 inches in diameter by 2 inches deep. Add the required amount of water (found from a curve, and depending on the amount of water already present in the sample), cover, and let stand until slaking is complete. Heat in an electric oven for 1 hour with cover on the dish, remove the cover and heat for 1 hour more, cool and weigh. Heat again and weigh at hourly intervals till minimum weight is obtained. A correction must be applied for the amount of CO_2 absorbed during drying, which is determined by finding the gain in weight on leaving the dish containing the dry slaked lime a given number of hours in the oven. The per cent gain in weight plus the per cent of water originally present is the total amount of water combined with the active CaO. A table is given with complete analyses, slaking test, causticizing test, lime used per pan in the mill, and causticity of digester liquor of 10 samples of lime.—A. P.-C.

Use of Rotten and Stained Wood for Making Sulphite Pulp. —E. Sutermeister. *Pulp and Paper*, xx, 513-514 (June 22, 1922). —Detailed results of two small-scale cooks, one of sound wood and one of moderately hard wood attacked by dry rot, are given. The fiber from the sound wood was of a good light color, while that from the rotten wood was much darker and contained numerous very brown shives. The yield per ton of wood is higher with the rotten wood, but it is lower per 100 cu. ft. of solid wood. The fiber from the rotten wood was much weaker and practically unbleachable. Comparative cooks were also run on sound clean wood, on sound wood which had become discolored or stained a grayish brown color, and on a mixture of the two. The yields were practically the same in the three cases. The fiber from the stained wood is darker than that from the clean wood and is full of dark-colored shives. The bleach consumption is much higher in the case of the fiber from stained wood, and some brownish yellow shives remain in the bleached fiber.—A. P.-C.

Modern Roasting and Washing Appliances for the Production of Sulphite Liquor.—*Papir-J.*, ix, 50-51, 56-57 (1921) *Chem. Abs.*, xvi, 829 (March 10, 1922).—To minimize the formation of sulphur trioxide the gas must be transferred to the washing tower through as short a distance as possible and should be cooled as quickly as possible. Construction of ovens and towers is described. Analysis of a sample gave Total SO_2 3.20 per cent, combined 1.09, free 2.11, lime 0.94, SO_3 0.03, calcium sulphate 0.05. The gases enter the tower at about 500° and go out at about 80°. The wash water at about 70° circulates at the rate of about 800 liter a minute. The SO_3 content never rises above 0.03 per cent.—A. P.-C.

Causticizing in the Presence of Silicates.—Ralph H. McKee and Thomas H. Hilton, Columbia University. *Paper*, xx, No. 22, 9-10, Aug. 2, 1922. *Pulp and Paper*, xx, 693-694 (Aug. 17, 1922). —Experiments are described which show that it is possible to obtain good causticization of soda solution containing silicate even in large proportions, by allowing sufficient time for the reaction to go to completion. A study should be made of the rate of the reaction with the particular materials used in the mill.—A. P.-C.

Advantages of Using Superheated Steam for Sulphite Cooking.—Edward Simonson. *Paper Ind.*, iii, 1248-1249 (Dec., 1921). —Brief general discussion.—A. P.-C.

Methanol in Sulphite Alcohol.—H. Bergstrom. *Svensk Papers-Tid.*, xxiv, 927-928 (1921); *Chem. Abs.*, xvi, 610 (Feb. 20, 1922).—A curve is given showing the per cent of methanol in the solution plotted against that in steam. The distillation factor for solutions containing 1 to 10 per cent methanol is about 1.5. It is possible to separate methanol completely from ethanol at small expense. —A. P.-C.

List of Abbreviated and Full Titles and of Address of the Journals from Which Abstracts Have Been Prepared for This Issue

Cellulosechem	Cellulosechemie. Supplement to Papierfabr., which see.
Chem. Abs.	Chemical Abstracts. E. J. Crane, Ohio State University, Columbus, Ohio.
J. Soc. Chem. Ind.	Journal of the Society of Chemical Industry. Central House, 46 and 47 Finsbury Square, London, E. C. 2, England.
Paper Ind.	The Paper Industry. 356 Monadnock Block, Chicago, Ill.
Paper Makeds' Monthly J.	The Paper Makers' Monthly Journal. Marchant Singer & Co., 47 St. Mary Ave., London, E. C. 3, England.
Paper Mill	The Paper Mill and Wood Pulp News. L. D. Post, Tribune Building, 154 Nassau St., New York City.
Papier	Le Papier. 16 Rue Du Rocher, Paris (8°), France.
Papierfabr	Der Papier-Fabrikant. Otto Elsner, Oranienstr. 140-142, Berlin, S.42, Germany.
Papir-J.	Papir-Journalen. Papierindustriens Hus, Huitf. gt. 1, Kristiania, Norway.
Pulp and Paper	Pulp and Paper Magazine of Canada. Gardenvale, Que.
Svensk Pappers-Tid.	Svensk Pappers-Tidning. Svenska Pappersbruksföreningen, Hovslagaregatan 3, Stockholm, Sweden.
Zellstoff u. Papier	Zellstoff und Papier. Verlag von Carl Hofmann, Papierhaus, Dessauer Str. 2, Berlin, S. W. 11, Germany.

ROGERS WET MACHINE

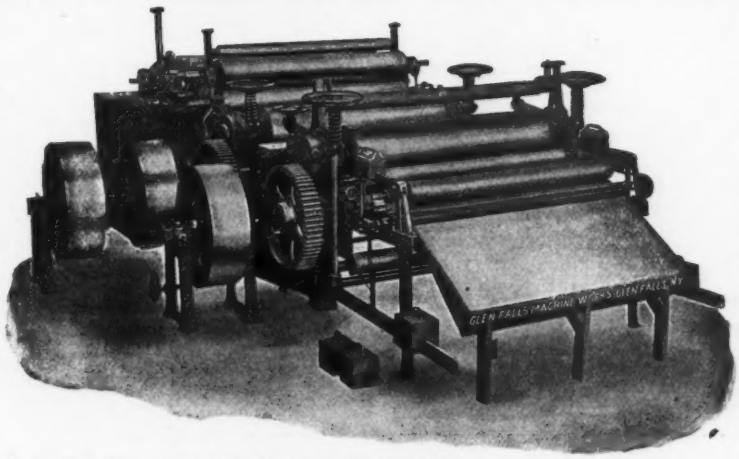

Illustration Shows Rogers Double Press Wet Machine

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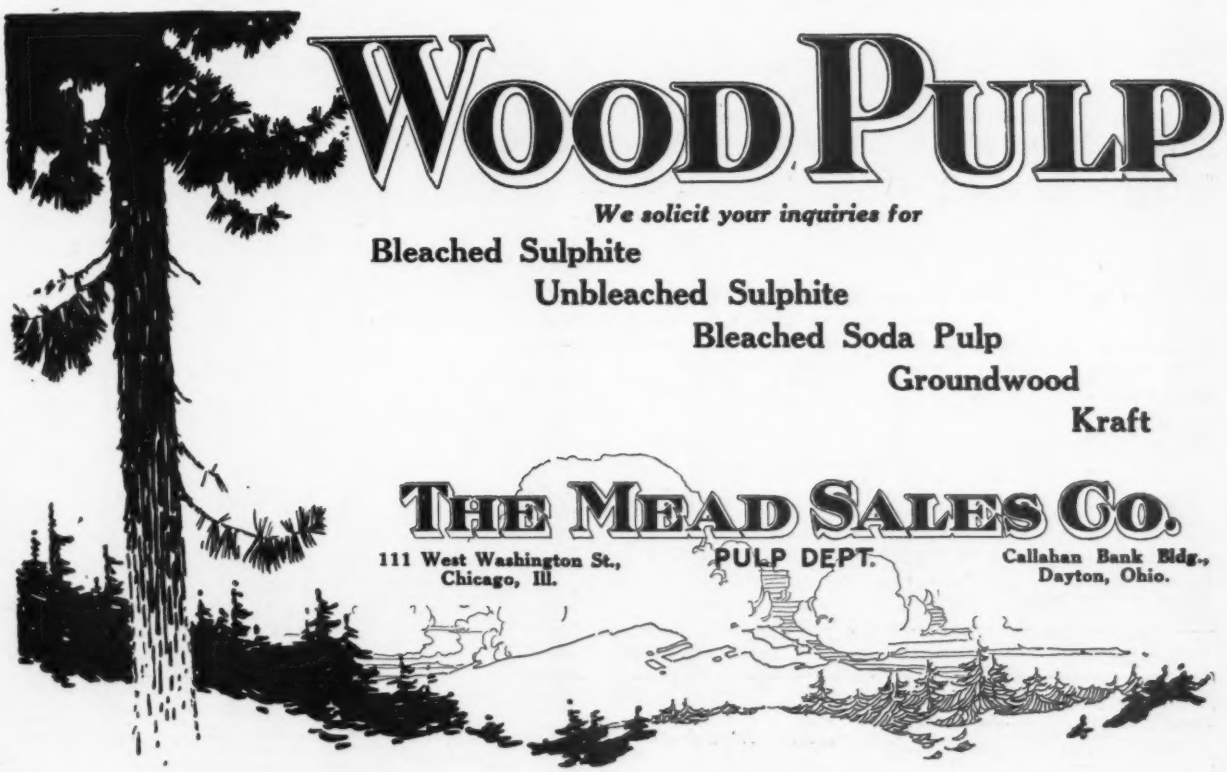

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PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

For the Month Ending July 31, 1922, and for the Seven Months Ended July 31, 1922, as Compared with Corresponding Months of Two Previous Years

IMPORTS—PAPER.

Paper and Manufactures of.	July 1921 Quantity	July 1921 Value	July 1922 Quantity	July 1922 Value	Seven Months Ended July 31 1921 Quantity	Seven Months Ended July 31 1921 Value	Seven Months Ended July 31 1922 Quantity	Seven Months Ended July 31 1922 Value
Books, Maps, etc., and other printed matter ..... Free	.....	$314,735	.....	$359,056	.....	$2,666,085	.....	$2,425,093
matter ..... Dut.	.....	224,282	.....	220,688	.....	1,258,317	.....	1,284,658
Decalcomania paper, not printed..... Free	.....	21,367	.....	12,612	.....	152,758	.....	56,903
Lithographic Labels and Prints (except Post Cards) ..... lbs..Dut.	142,307	79,552	118,769	54,038	670,063	471,209	1,026,665	461,904
Paper Hangings ..... Dut.	.....	42,749	.....	62,664	.....	245,361	.....	366,045
Photographic ..... lbs..Dut.	188,185	45,154	90,838	25,361	993,839	204,374	1,485,617	431,523
Printing Paper—								
News print ..... lbs..Free	132,235,265	6,496,094	160,673,783	5,608,152	832,974,364	48,170,254	1,132,597,325	39,539,694
All other ..... lbs..Dut.	33,136	6,960	146,671	26,125	1,213,136	176,019	789,882	81,297
Post Cards, Souvenir..... Dut.	.....	7,322	.....	4,574	.....	52,287	.....	35,468
Pulp board, in rolls ..... lbs..Dut.	1,787,387	48,630	3,789,421	97,453	26,013,369	781,233	39,359,023	1,023,080
Surface-coated ..... lbs..Dut.	65,404	16,439	59,705	14,342	588,097	148,501	552,060	120,491
Wrapping ..... lbs..Dut.	872,553	36,515	7,071,568	273,323	5,620,467	298,583	30,554,321	1,166,712
All other ..... Dut.	.....	239,931	.....	266,889	.....	2,010,109	.....	1,746,610
Total Paper, and Manufactures of.....	.....	$7,579,730	.....	$7,025,277	.....	$56,635,090	.....	$48,739,478
PAPER AND MANUFACTURES OF CRUDE PAPER STOCK.								
Rags (except woolen)..... lbs..Free	10,020,307	$109,450	17,891,144	$244,506	52,996,311	$1,095,100	140,437,815	$2,148,070
All other kinds of paper stock... lbs..Free	7,049,354	162,470	14,901,844	364,313	55,833,978	1,280,567	85,425,921	2,076,837
WOOD PULP.								
Mechanically ground ..... tons..Free	13,687	$265,939	15,340	$417,507	49,991	$2,014,135	88,427	$2,446,930
Chemical—								
Unbleached—								
Sulphate ..... tons..Free	8,931	$659,962	24,653	$1,389,746	46,633	$4,536,590	136,628	$8,067,836
Sulphite ..... tons..Free	14,664	1,043,937	36,969	1,866,799	66,011	6,410,348	192,698	10,457,222
Total ..... tons..Free	23,595	$1,703,899	61,622	$3,256,545	112,644	$10,946,938	329,326	$18,525,058
Imported from—								
Finland ..... tons	.....	.....	5,220	$273,802	.....	.....	25,702	$1,177,363
Norway ..... tons	402	$24,509	1,249	60,965	1,502	$141,782	15,240	821,266
Sweden ..... tons	2,575	168,281	32,877	1,666,559	19,613	2,121,775	123,404	6,729,453
Canada ..... tons	15,415	1,142,245	21,911	1,232,988	73,227	6,619,945	151,322	9,003,307
Other countries ..... tons	5,203	363,864	365	22,231	18,302	2,063,436	13,658	793,669
Bleached—								
Sulphate ..... tons..Free	2	$186	3,019	$179,964	891	$73,738	6,573	$444,001
Sulphite ..... tons..Free	5,677	608,511	16,286	1,368,606	35,421	4,702,339	107,694	9,247,088
Total ..... tons..Free	5,679	$608,697	19,305	$1,548,570	36,312	$4,776,077	114,267	$9,691,089
Imported from—								
Finland ..... tons	.....	.....	1,904	$130,651	.....	.....	7,769	$458,218
Norway ..... tons	207	$28,887	1,505	130,711	4,368	$761,488	22,424	1,966,471
Sweden ..... tons	230	27,665	4,405	277,503	1,656	212,689	16,761	1,194,188
Canada ..... tons	4,520	454,258	10,917	970,046	24,235	2,995,907	62,571	5,733,594
Other countries ..... tons	722	97,887	574	39,659	6,053	805,993	4,742	338,618
CHEMICALS AND OTHER PAPER MAKERS' MATERIALS.								
Colors or dyes, n.e.s..... lbs..Dut.	508,000	$746,495	164,468	$229,173	1,952,518	$2,560,750	1,886,043	$2,583,822
Imported from—								
Germany ..... lbs.	272,142	$404,399	64,401	$73,659	625,000	$822,702	784,495	$992,964
Switzerland ..... lbs.	165,822	250,971	77,450	128,635	992,966	1,269,450	843,000	1,351,585
United Kingdom ..... lbs.	7,376	9,073	9,854	11,998	125,300	184,776	143,822	126,919
Other countries ..... lbs.	62,660	82,052	12,763	14,881	209,252	283,822	114,726	112,354
Indigo—								
Natural ..... lbs..Dut.	1,535	$7,068	1,543	$4,168	33,405	$66,137	4,066	$6,130
Synthetic ..... lbs..Dut.	3,646	1,458	.....	.....	27,243	15,864	57,961	88,864
Alizarin and alizarin dyes..... lbs..Dut.	90,662	91,253	42,564	66,177	242,091	261,309	280,048	422,879
Lactarene or Casein..... lbs..Free	309,565	18,639	1,159,900	125,195	6,530,373	661,376	8,192,765	632,040
Lime, Chlor. of ..... lbs..Dut.	618,487	12,561	104,020	3,629	3,329,038	78,818	7,760,694	107,142
Magnesite, not purified..... tons..Free	1,099	22,614	15,548	266,225	25,109	358,309	63,787	1,165,622
Potash, Hydrate of..... lbs..Free	818,442	42,735	2,309,080	145,060	4,805,627	275,500	10,465,452	576,359
Sulphur or Brimstone..... tons..Free	.....	1	130	4,128	2	107	130	4,149
China clay or kaolin..... tons..Dut.	5,667	60,394	31,607	308,351	64,581	731,113	137,185	1,468,303
PULPWOOD.								
Rough ..... cords..Free	41,620	$544,200	31,168	$335,173	185,832	$2,320,098	110,726	$1,088,331
Peeled ..... cords..Free	34,428	437,422	56,877	560,518	579,879	8,844,604	424,478	4,402,710
Rossed ..... cords..Free	10,750	205,615	20,349	295,786	53,208	1,043,577	49,779	643,056
Total ..... cords	86,798	$1,187,237	108,394	$1,191,477	818,919	$12,208,279	584,983	$6,134,097

(*Continued on page 66*)

THE APPLETON MACHINE COMPANY

HORIZONTAL WOOD SPLITTERS
CENTRIFUGAL PUMPS
CYLINDER MOULDS
JORDAN ENGINES
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FLAT SCREENS
AGITATORS
CHIPPERS
DECKERS
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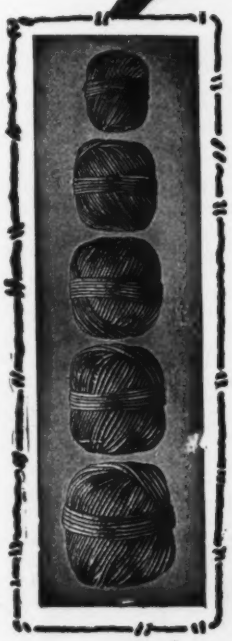

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CORDAGE

PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

(*Continued from page 64*)

EXPORTS—PAPER.

Paper and Manufactures of.	July 1921 Quantity	July 1921 Value	July 1922 Quantity	July 1922 Value	Seven Months Ended July 31 1921 Quantity	Seven Months Ended July 31 1921 Value	Seven Months Ended July 31 1922 Quantity	Seven Months Ended July 31 1922 Value
Paper, except printed matter (total)	.....	$1,335,640	.....	$2,002,332	.....	$21,522,022	.....	$13,826,330
Printing Paper—								
News Print ..... lbs.	2,118,542	$119,286	4,277,144	$190,527	21,779,115	$1,568,088	34,250,768	$1,526,584
Exported to—								
Canada	.....	.....	172,230	$10,743	387,046	$35,767	1,353,925	$88,873
Central America	.....	.....	91,837	5,252	.....	.....	920,480	48,703
Cuba	756,442	$41,023	2,201,607	91,261	9,970,468	672,163	11,175,179	457,513
Argentina	.....	.....	578,685	23,147	4,262,098	310,300	10,827,788	428,629
Other South America	61,852	4,286	437,161	19,475	1,706,339	145,116	1,114,299	151,351
China	30,199	1,820	123,621	4,460	242,160	18,058	1,254,865	50,375
Philippine Islands	363,695	20,273	387,082	17,694	2,273,454	165,373	2,087,082	96,777
Other countries	906,354	51,884	284,921	18,495	2,937,550	221,311	3,517,150	204,363
Bible or India paper ..... lbs.	.....	.....	280	$30	.....	.....	11,221	$2,287
Other book paper, not coated ..... lbs.	1,684,547	$205,861	3,066,183	$288,461	32,502,398	$5,033,376	16,278,564	$1,581,679
Exported to—								
United Kingdom	9,788	$1,737	52,613	$12,580	215,812	$54,498	315,646	$69,381
Canada	117,062	17,127	191,916	22,799	1,839,882	239,444	1,346,232	154,678
Central America	.....	.....	20,840	2,385	.....	.....	224,697	25,520
Mexico	337,056	44,427	266,764	18,982	2,237,231	361,518	1,484,125	133,314
Cuba	159,597	17,041	502,086	48,014	3,562,436	587,588	3,004,062	291,629
Argentina	81,106	13,762	358,203	37,865	5,505,063	783,636	813,268	71,944
Brazil	53,565	5,883	374,298	41,370	1,075,790	206,215	958,547	107,182
Venezuela	17,178	2,343	99,985	9,596	273,388	51,961	413,478	45,504
Other South America	99,579	10,787	180,238	17,089	2,282,022	352,476	837,676	84,379
British India	144,437	12,713	5,428	714	895,015	132,749	157,910	17,304
China	100,122	12,307	161,600	13,514	2,820,237	491,839	1,415,210	130,323
Japan	225,953	23,039	484,067	30,577	1,530,574	160,234	2,591,171	187,414
Philippine Islands	133,917	14,174	41,751	4,414	2,594,237	461,976	1,317,953	127,254
Australia	27,169	3,576	6,283	780	4,437,465	591,202	443,991	42,298
Other countries	178,018	26,945	320,111	27,782	3,233,246	558,040	954,598	93,555
Cover paper ..... lbs.	.....	.....	89,879	$13,452	.....	.....	765,706	$118,779
Grease-proof and waterproof paper ..... lbs.	.....	$6,573	116,671	12,820	.....	$96,264	652,790	79,873
Wrapping paper ..... lbs.	2,056,412	133,778	.....	.....	16,417,720	1,650,495	.....	.....
Kraft wrapping ..... lbs.	.....	.....	41,028	2,976	.....	.....	523,212	43,125
Other wrapping ..... lbs.	.....	.....	3,077,802	190,816	.....	.....	20,632,264	1,259,010
Writing paper and envelopes	.....	163,696	.....	.....	.....	3,485,444	.....	.....
Writing paper, except in papeteries ..... lbs.	.....	.....	611,460	80,953	.....	.....	4,179,191	665,159
Surface-coated paper ..... lbs.	.....	.....	179,948	31,391	.....	.....	2,118,476	345,429
Tissue and toilet paper	.....	44,629	.....	.....	.....	552,922	.....	.....
Tissue and crêpe paper ..... lbs.	.....	.....	231,644	66,984	.....	.....	1,399,714	343,377
Toilet paper ..... lbs.	.....	.....	446,280	44,849	.....	.....	3,033,642	312,885
Paper towels and napkins ..... lbs.	.....	11,198	60,443	10,470	.....	108,301	476,081	75,370
Bristols and bristol board ..... lbs.	.....	.....	186,186	14,823	.....	.....	1,121,523	120,580
Paper board and straw board ..... lbs.	.....	99,500	4,047,641	164,215	.....	1,732,973	27,806,153	1,154,254
Sheathing and building paper ..... lbs.	.....	.....	577,700	18,262	.....	.....	3,069,613	117,987
Wall board of paper or pulp ..... sq. ft.	.....	37,400	923,348	29,729	.....	504,720	5,683,184	214,607
Cigarette paper and books ..... lbs.	.....	.....	18,972	5,824	.....	.....	365,400	145,895
Photographic paper ..... lbs.	.....	.....	83,900	102,532	.....	.....	848,244	854,823
Paper hangings (wall paper) ..... yard	.....	12,171	429,708	15,163	.....	448,121	10,002,475	263,158
Paper bags ..... lbs.	.....	36,384	1,084,957	89,961	.....	572,740	7,347,385	664,460
Boxes and cartons ..... lbs.	.....	84,395	912,257	76,866	.....	778,735	5,820,763	424,139
Carbon paper ..... lbs.	.....	26,247	47,588	34,975	.....	330,242	421,244	328,863
Envelopes ..... lbs.	.....	.....	210,659	43,662	.....	.....	1,515,930	289,818
Indurated fiber ware ..... lbs.	.....	.....	676,554	4,184	.....	.....	222,223	19,197
Playing cards ..... pack	.....	57,856	1,280,513	101,754	.....	464,700	2,918,551	336,345
Cash-register and adding-machine paper .. lbs.	.....	9,172	72,212	7,580	.....	116,100	435,675	50,646
Papeteries (writing paper in boxes) .... lbs.	.....	.....	25,278	10,144	.....	.....	149,340	54,175
Other paper and paper products, n.e.s. .. lbs.	.....	287,493	3,400,334	348,929	.....	4,078,801	18,845,863	2,433,826
Books, maps, pictures, and other printed matter ..... lbs.	.....	$1,279,205	.....	.....	.....	$12,910,114	.....	.....
Books and Pamphlets ..... lbs.	.....	.....	1,441,804	$546,938	.....	.....	11,199,439	$4,126,577
Maps and charts ..... lbs.	.....	.....	11,971	14,578	.....	.....	71,379	106,060
Music in books or sheets ..... lbs.	.....	.....	31,294	23,588	.....	.....	255,333	171,569
Souvenir post cards ..... lbs.	.....	.....	19,226	13,079	.....	.....	818,755	121,469
Lithographically printed matter, except post cards and maps ..... lbs.	.....	.....	85,202	52,684	.....	.....	902,460	607,596
Other printed matter ..... lbs.	.....	.....	2,790,509	604,704	.....	.....	12,344,457	3,969,083

WOOD PULP AND PAPER STOCK.

Wood Pulp ..... tons	1,333	$54,902	.....	.....	15,024	$1,195,443	.....	.....
Mechanical wood pulp ..... tons	.....	.....	.....	.....	.....	.....	63	$4,302
Sulphite wood pulp ..... tons	.....	.....	1,273	$77,358	.....	.....	11,185	510,808
Soda wood pulp ..... tons	.....	.....	63	5,047	.....	.....	1,865	167,024
Kraft wood pulp ..... tons	.....	.....	.....	.....	.....	.....	.....	.....
Other wood pulp ..... tons	.....	.....	65	2,791	.....	.....	970	64,153
Rags, and other paper stock ..... lbs.	1,573,522	23,519	4,913,289	81,253	16,216,388	376,193	50,972,762	824,265

PAPER AND PULP MILL MACHINERY.

Paper and pulp-mill machinery	.....	$228,923	.....	.....	.....	$1,840,506	.....	.....
Pulp-mill machinery ..... lbs.	.....	.....	350,694	$12,560	.....	.....	582,891	$40,051
Paper-mill machinery ..... lbs	.....	.....	447,963	117,775	.....	.....	3,896,563	1,180,502

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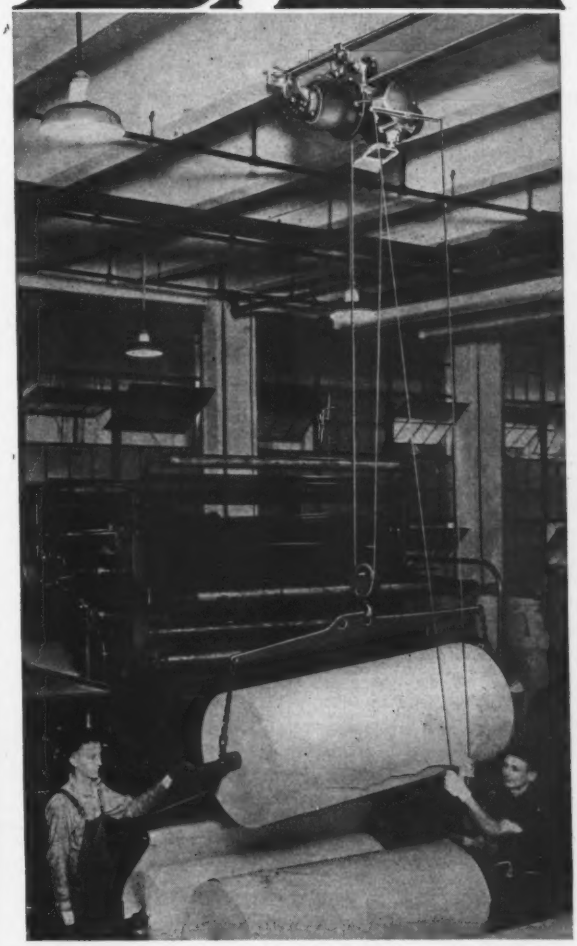

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SHEPARD ELECTRIC CRANES & HOISTS

Imports and Exports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING OCTOBER 7, 1922

SUMMARY

News print.....50 bls., 2,213 rolls
Printing paper .....182 cs.
Wall paper.....59 bls., 1,835 rolls, 21 cs.
Wrapping paper.....1,134 bls., 2,980 rolls, 5 cs.
Packing paper .....587 bls.
Writing paper .....9 cs.
Cigarette paper .....2,310 cs.
Paper hangings.....7 bls., 3 pkgs.
Photo paper .....62 cs.
Filter paper.....18 bls., 43 cs.
Tissue paper.....15 bls., 20 cs.
Carbon paper .....15 cs.
Colored paper .....24 cs.
Metal paper .....11 cs.
Blueprint paper .....190 rolls
Tracing paper .....26 cs.
Parchment paper.....2 rolls, 19 cs.
Miscellaneous paper,
1,576 bls., 5,720 rolls, 259 cs., 58 pkgs.

CIGARETTE PAPER

British-American Tobacco Company, Cedric, Liverpool, 25 cs.
British-American Tobacco Company, Adriatic, Liverpool, 46 cs.
British-American Tobacco Company, Carmania, Liverpool, 24 cs.
S. Alexandre, Hannington Court, Bordeaux, 5 cs.
Rose & Frank, La Touraine, Havre, 15 cs.
American Tobacco Company, Collamer, Bordeaux, 2,000 cs.
Gluckman & Strauck, by same, 9 cs.
De Manduit Paper Corporation, Collamer, St. Nazaire, 186 cs.

WALL PAPER

F. G. Prager, Minnekahda, Hamburg, 42 bls., 6 cs.
F. J. Emmerich & Co., Majestic, Liverpool, 1 cs.
A. C. Dodman, Jr., Gothland, Antwerp, 4 bls.
F. G. Prager, by same, 172 rolls.
J. Munroe & Co., Mt. Carroll, Hamburg, 1,663 rolls.
Bernard Judae & Co., Hansa, Hamburg, 5 bls.
Reeve Shipping Company, Barbadian, London, 7 cs.
W. H. S. Lloyd & Co., Barbadian, London, 12 bls., 3 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Adriatic, Liverpool, 3 pkgs.
A. C. Dodman, Jr., Cedric, Liverpool, 7 bls.

PHOTO PAPER

J. J. Gavin, Cedric, Liverpool, 1 cs.
Geneart Company of America, Gothland, Antwerp, 4 cs.
Geneart Company of America, Finland, Antwerp, 56 cs.
T. F. Wilmot & Co., Barbadian, London, 1 cs.

FILTER PAPER

H. Reeve, Angel & Co., Inc., Barbadian, London, 3 cs.
National Park Bank, Hansa, Hamburg, 1 cs.
E. Fougera & Co., Majestic, Bordeaux, 35 cs.
H. Reeve, Angel & Co., Inc., Majestic, Southampton, 4 cs.
C. G. Euler & Co., Hannington Court, Bordeaux, 18 bls.

DRAWING PAPER

H. Reeve, Angel & Co., Inc., Majestic, Southampton, 1 cs.
Keuffel & Esser, Mt. Carroll, Hamburg, 22 cs.
Keuffel & Esser, Hansa, Hamburg, 36 cs.

WRITING PAPER

F. L. Kraemar & Co., Barbadian, London, 9 cs.

TISSUE PAPER

Wilkinson Brothers & Co., Inc., Adriatic, Liverpool, 15 bls.
C. H. Wyman Company, by same, 3 cs.
F. C. Strype, by same, 6 cs.
F. C. Strype, Cedric, Liverpool, 4 cs.
Meadows, Wye & Co., by same, 7 cs.

CARBON PAPER

Cassel & Rothstein, Minnekahda, Hamburg, 15 cs.

NEWS PRINT

Street & Smith, Hellig Olav, Copenhagen, 516 rolls.
Chemical National Bank, Bergensfjord, Kristiania, 177 bls.
Chemical National Bank, Hannover, Bremen, 394 rolls.
Central Union Trust Company, Stockholm, Gothenburg, 639 rolls.
H. S. Chalfont, by same, 99 rolls, 50 bls.
C. L. Robinson, by same, 388 rolls.

WRAPPING PAPER

F. A. Munsey Company, Stockholm, Gothenburg, 76 bls.
Arkell Safety Bag Company, by same, 452 rolls.
International Forwarding Company, by same, 6 bls.
Blauvelt, Wiley Paper Manufacturing Company, by same, 21 bls.
Maurice O'Meara Company, by same, 210 bls., 192 rolls.
H. Fuchs & Son, by same, 59 rolls, 20 bls.
H. S. Fulling & Co., Inc., by same, 156 bls., 1,246 rolls.
L. Wyman Son, by same, 334 rolls, 119 bls.
D. S. Walton & Co., Hansa, Hamburg, 327 bls., 568 rolls.
Irving National Bank, Londonier, Antwerp, 50 bls.
Wilkinson Brothers & Co., Inc., Independence Hall, Rotterdam. 149 bls., 129 rolls.
H. Reeve, Angel & Co., Inc., Gothland, Antwerp, 5 cs.

PACKING PAPER

J. P. Heffernan Paper Company, H. Olav, Copenhagen, 442 bls.
J. P. Heffernan Paper Company, Bergenfjord, Kristiania, 145 bls.

PRINTING PAPER

P. C. Zuhlke, Gothland, Antwerp, 78 cs.
B. F. Drakenfeld & Co., Carmania, Liverpool, 24 cs.
F. B. Vandegrift & Co., Hansa, Hamburg, 80 cs.

COLORED PAPER

P. C. Zuhlke, Hansa, Hamburg, 22 cs.
Hensel, Bruckman & Lorbacher, by same, 2 cs.

METAL PAPER

Irving National Bank, Hansa, Hamburg, 11 cs.

BLUEPRINT PAPER

Keuffel & Esser, Hansa, Hamburg, 84 rolls.
Keuffel & Esser, Mt. Carroll, Hamburg, 106 rolls.

TRACING PAPER

Keuffel & Esser, Mt. Carroll, Hamburg, 19 cs.
Keuffel & Esser, Hansa, Hamburg, 7 cs.

PARCHMENT PAPER

Irving National Bank, Finland, Antwerp, 8 cs, 2 rolls.
N. J. Worsted Spinning Company, Hannover, Bremen, 11 cs.

PAPER

M. G. Lange, by same, 10 cs.
Globe Shipping Co., by same, 80 cs.
C. H. Boulin, Bourbonnais, Marseilles, 35 cs.
P. C. Zuhlke, Gothland, Antwerp, 65 cs.
W. Levermann, by same, 7 cs.
H. D. Catty, Mt. Carroll, Hamburg, 5 cs.
J. Manheimer, La Touraine, Havre, 58 pkgs.
Brown Bros. & Co., Kerhonkson, Dublin, 561 bls.
H. S. Fulling & Co., Inc., Stockholm, Gothenburg, 27 bls., 646 rolls.
T. Barrett Sons, by same, 51 bls.
T. Claussen, by same, 246 rolls.
Maurice O'Meara Company, by same, 2,860 rolls.
C. K. MacAlpine, by same, 108 bls.
Blaunett Wiley Paper Mfg. Company, by same, 78 rolls.
M. M. Cohen, by same, 234 rolls, 46 bls.
Coy Disbrow & Co., Inc., by same, 31 rolls.
W. F. Ethrington & Son, Columbia, Glasgow, 54 cs.
Irving National Bank, Hausa, Hamburg, 783 bls., 1,625 rolls.
H. Reeve Angel & Co., Inc., Finland, Antwerp, 3 cs.

RAGS, BAGGING, ETC.

E. J. Keller Company, Inc., America, Bremen, 38 bls. rags.
E. J. Keller Company, Inc., Bourbonnais, Marseilles, 140 bls. rags.
Castle, Gottheil & Overton, by same, 84 bls. rags.
Castle, Gottheil & Overton, La Bourdonnais, Rouen, 195 bls. rags.
Castle, Gottheil & Overton, La Bourdonnais, Havre, 958 bls. rags.
Castle, Gottheil & Overton, Cabo Ortegal, Barcelona, 165 bls. rags, 250 bls. bagging.
Castle, Gottheil & Overton, Missouri, Bordeaux, 517 bls. rags.
Castle, Gottheil & Overton, Anaconda, Antwerp, 441 bls. rags.
E. Butterworth & Co., Inc., by same, 118 bls. bagging.
Brown, Bros. & Co., by same, 287 bls. rags.
E. J. Keller Company, Inc., by same, 29 bls. flax waste.
M. O'Meara Company, by same, 149 bls. flax waste, 280 bls. bagging.
American Woodpulp Corporation, by same, 130 bls. bagging, 183 bls. new cuttings, 480 bls. rags.
M. O'Meara Company, Gothland, Antwerp, 210 bls. flax waste.
E. J. Keller Company, Inc., Mt. Carroll, Hamburg, 140 bls. rags.
Waste Material Trading Corporation, Londonier, Antwerp, 411 bls. rags.
Equitable Trust Company, by same, 79 bls. rags.
W. Schall & Co., by same, 352 bls. rags.
Irving National Bank, by same, 200 bls. flax waste.
E. J. Keller Company, Inc., by same, 220 bls. flax waste.
American Express Company, by same, 496 bls. rags.
Goldman, Sachs & Co., by same, 256 bls. rags.
Alexander Brown & Co., by same, 57 bls. rags.
Irving National Bank, Cameronia, Glasgow, 44 bls. paper stock.
Brown Shipping Company, Chicago City, Bristol, 115 bags, waste paper.
Brown Bros. & Co., by same, 953 bls. rags.
Battery Park National Bank, by same, 384 bls. rags.
American Express Company, by same, 377 bls. rags.
Katzenstein & Keene, Inc., Kerhonkson, Belfast, 159 bls. paper stock.
Guaranty Trust Company, by same, 340 bls. paper stock.
Katzenstein & Keene, Inc., Cabo Villano, Barcelona, 395 bls. rags.
Katzenstein & Keene, Inc., Stormking, Rotterdam, 380 bls. rags, 48 bls. new cuttings, 128 bls. bagging.
Katzenstein & Keene, Inc., African Prince, Leith, 67 bls. bagging.
Salomon Bros. & Co., Hannington Court, Bordeaux, 45 bls. rags.
Castle, Gottheil & Overton, by same, 85 bls. rags.
W. Schall & Co., by same, 1,068 bls. rags.
F. P. Gaskell, Hannover, Bremen, 112 bls. rags.
M. Welfer, Pastores, Havana, 12 bls. rags.
Equitable Trust Company, Columbia, Glasgow, 46 bls. paper stock, 86 bls. waste paper, 55 bls. rags.
Equitable Trust Company, Gerty, Trieste, 295 bls. rags.
E. Butterworth & Co., Inc., Adriatic, Liverpool, 44 bls. bagging.
International Acceptance Bank, Finland, Antwerp, 93 bls. flax waste.

OLD ROPE

E. J. Keller Company, Inc., Chicago City, Bristol, 58 coils.
Brown Bros. & Co., Inc., by same, 183 coils.
Cleveland, Akron Bag Company, by same, 58 coils.
Katzenstein & Keene, Inc., Cabo Villano, Barcelona, 23 bls.
E. J. Keller Company, Inc., Union City, Liverpool, 88 coils.
Goldman, Sachs & Co., Independence Hall, Rotterdam, 72 coils.
Brown Bros. & Co., by same, 36 coils.
Maurice O'Meara Company, Anaconda, Antwerp, 63 coils.

CASEIN

T. M. Duche & Son, Hannington Court, Bordeaux, 151 bags.

WOOD FLOUR

B. L. Soberski, Bergensfjord, Kristiania, 3,362 bags.
A. Kramer & Co., Minnekahda, Hamburg, 560 bags.

WOODPULP

W. Lalen Pulp & Paper Mills, M. Dollar, Port Alice, 9,622 bls., 1,374 tons.
R. F. Hammond, Bergensfjord, Kristiania, 900 bls., 150 tons.
M. Gottesman & Co., Inc., by same, 600 bls., 100 tons.
E. J. Keller Company, Inc., by same, 300 bls., 50 tons.
Kidder, Peabody & Co., by same, 1,200 bls., 200 tons.

(Continued on page 72)

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New York Market Review

OFFICE OF THE PAPER TRADE JOURNAL,
TUESDAY, OCTOBER 10, 1922.

Showing an increase of more than 52 per cent over the demand in 1918, news print consumption for the first eight months of the current year totals upwards of 1,312,500 tons. At this rapid clip, which was even bettered during the month of September and during the first ten days of this month, the total news print consumption of the United States for 1922 should be a record breaking one, considerably over two million tons. Recent statistics show that during the present year, through the month of August, 14 per cent more print paper was used by the country's newspapers than during a similar period in 1921. Further, the fact that news print is admitted free under the new tariff law, whereas wrapping and printing papers now carry a duty of one-quarter cent and ten per cent, should greatly stimulate the import of this commodity.

The paper market as a whole, in and around New York, is steadying in price tone and nearly every grade is moving actively. There is nothing sporadic in the movement of the various grades, with the possible exception of the pulp market, and the fact that progress is being made slowly and steadily is generally taken as a more optimistic manifestation than if it were coming with leaps and bounds, giving rise to a multitude of "runaway" markets.

In the view of a very prominent New York dealer in bonds, ledgers and writing papers, the paper market is undergoing a logical period of constructive development. Merchants that had long been conducting their business on "shoe-string" stocks are now eager to replenish their storerooms and confidence has been wholly regained, in his opinion. The present era of good business is not precipitated solely by the recent industrial tieups nor by the sudden entrance of all consumers into the buying market. The basic industries are expanding, advertising is on the increase, newspapers and magazines are printing larger editions and more paper is, in consequence, being required.

Spot prices for news print in both sheets and rolls advanced slightly during the week, resulting, probably, from the considerably increased demand. Although statistics have not been published as yet, it is estimated that an increase of more than 30 per cent over the month of September, 1921, will be noted for the consumption of news print during the same month this year.

The tendency in the book paper market is toward still further stiffening over the ten per cent increases which were announced last week for coated enamel and lithograph book and five per cent on sized and super calendered, machine finished, and machine finished lithographed. A few buyers are still holding off, giving the market an occasional irregular twist, but, on the whole, the demand is good and mills are kept busy with the many orders on hand.

The last minute report of a prominent writing paper dealer of New York was to the effect that Tuesday's mail of this week had brought notices from four mills announcing increases of from one-half to one cent all along the line. Fine papers are continuing to stiffen despite the resumption of weekly quotations on the part of the mills. Business is good and the market has a firm undertone.

Wrappings are enjoying a steady demand and the fact that the prices of Scandinavian kraft paper are now higher than the American plus import duty, due to the recent advances, should tend to curtail importation unless domestic wrappings undergo a similar price increase. Kraft pulp is heading skyward and the cost of raw materials used in manufacture is almost certain to bring about an upward price revision in this market before the end of the quarter.

Test container, fiber and corrugated box-boards have advanced slightly during the past week, the other grades remaining firm at their previous levels. Activity in this market is regular and about as much as the mills can handle conveniently under the present circumstances, but a certain amount of reticence on the part of buyers to stock up at the present high price levels has had the effect of quieting the tone of the market down for the past week to ten days. Mill representatives are emphatic in their assertions that prices will not only remain firm but are apt to go still higher.

Mechanical Pulp

Ground wood continues to strengthen its position due to the fact that there has been no perceptible falling off in demand since the announcement of the higher schedule of prices last week. Domestic producers are quoting in the neighborhood of $34 and $35 per net ton on prompt shipments of prime spruce pulp, while the imported pulp can scarcely be obtained under $36 to $38, ex dock, New York. The coming of abundant rains during the past week proved a double blessing to grinders. Not only did the rains replenish depleted reservoirs and permit grinding operations to continue full blast, but they were also largely responsible for extinguishing several raging forest fires that were devastating enormous areas of pulpwood lands. Spot supplies of ground wood are very difficult to locate, according to New York mill agents.

Chemical Pulp

Domestic bleached sulphite is still paralleling foreign pulp in point of upward price movement. Five cents a pound f. o. b. mill and better is being quoted by mills that are not already sold up for the balance of the current year, while kraft pulp adheres to a minimum selling price of 2.75 cents, going frequently as high as 3.00. Imported prices are still going up almost daily and weekly quotations must be regarded as nominal. Imported sulphite, bleached, is listed at the c. i. f. price of 4.40 to 4.75 while No. 1 unbleached seldom is handled for less than 2.80 cents per pound, ex dock, New York. Demand for all grades has been persistent on both domestic and foreign pulps, and the threatened "runaway" market of a week ago appears to be settling into a more steady period of rising prices.

Old Rope and Bagging

Old rope was reported to have fared remarkably well during the past week, as compared with the strides which it has taken in recent months. The demand was routine, and dealers are still taking in but slightly more than is absolutely necessary to cover their demands week by week. Old manila rope has been moving at 5.50 to 5.75 and mixed strings in carload lots as high as 80 cents per hundred. Bagging eased off a trifle among dealers, roofing having dropped slightly under a cent a pound during the week. No. 1 scrap has, however, held firm at the quoted price of 1.10.

Waste Paper

Orders have been coming in as never before in the waste paper market. With the advanced cost of soda pulp, mills again find it more profitable to utilize considerable quantities of paper stock, although they often find difficulty in placing orders for sizable amounts. Board mills have required large lots of mixed papers and prices have ranged from 1.15 to 1.20 cents a pound for No. 1 mixed. Book and ledger stocks have been moving actively, as have old krafts and No. 1 shavings.

Rags

Rags have held fairly steady in price in spite of the efforts of roofing felt manufacturers to establish a lower level. The latter have placed an embargo on all purchases at the present high prices, but at their present rate of activity, dealers do not believe they will be able to remain out of the market for any length of time. Mixed rags are firm to strong with prices as high as 2.25 for choice packing.

Twine

Stiffening in nearly every grade, the twine market of the past week exhibited the first pronounced signs of life in many months. When prices finally attain the level that they must reach in consequence of the short crop of jute, the market is expected to be quite firm and a steady demand to continue throughout the balance of the fall and winter.

XUM

Market Quotations

Paper Company Securities

New York Stock Exchange closing quotations October 10, 1922:

	BID	ASKED
American Writing Paper Company, pref.	33½	34
International Paper Company, com.	59¾	60
International Paper Company, pref., stamped	78	79¼
Union Bag & Paper Corporation	72	73

Paper

F. o. b. Mill.

Ledgers	10.50	@	38.00
Bonds	9.00	@	55.00
Writings—			
Extra Superfine	16.00	@	35.00
Superfine	14.00	@	30.00
Tub Sized	10.00	@	15.00
Engine Sized	8.50	@	11.00
News—f. o. b. Mill—			
Rolls, contract	3.85	@	4.00
Rolls, transit	4.00	@	—
Sheets	4.00	@	—
Side Runs	3.25	@	3.50
Book, Cased—f. o. b. Mill			
S. & S. C.	7.00	@	8.00
M. F.	6.50	@	7.50
Coated and Enamel	9.00	@	9.50
Lithograph	9.00	@	9.50
Tissues—f. o. b. Mill			
White, No. 1	All quotations withdrawn		
Colored			
Anti-Tarnish			
Silver Tissue			
Manila			
Kraft—f. o. b. Mill—			
No. 1 Domestic	7.00	@	7.50
No. 2 Domestic	5.50	@	6.25
Imported	6.00	@	6.25
Screenings	3.00	@	3.50
Manila—			
No. 1 Jute	8.50	@	9.00
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.50	@	5.50
No. 2 Wood	4.00	@	4.50
Butchers	4.25	@	4.75
Fiber Papers—			
No. 1 Fiber	6.00	@	6.25
No. 2 Fiber	5.00	@	5.25
Common Bogus	2.50	@	—
Card Middies	4.00	@	5.00
Boards—per ton—			
News	65.00	@	—
Straw	—	@	—
Chip	60.00	@	—
Binders' Board	75.00	@	—
Sgl. Mla. Ll.Chip	70.00	@	—
Wood Pulp	—	@	—
Container	—	@	—
Wax Paper—			
Self Sealing White 28 and 30 lb. basis	11.00	@	12.00
Waxed Tissue	1.60	@	1.80
Glassine—			
Bleached, basis 25 lbs.	All quotations withdrawn		
Bleached, basis 20 lbs.			

Mechanical Pulp

(Ex-Dock)

No. 1 Imported	34.00	@	40.00
No. 1 Domestic	32.00	@	36.00

(F. o. b. Pulp Mills.)

Chemical Pulp

(Ex-Dock, Atlantic Ports.)

Sulphite (Imported)—			
Bleached	4.40	@	4.75
Easy Bleaching	2.85	@	3.10
No. 1 strong unbleached	2.80	@	3.00
No. 2 Strong unbleached	2.50	@	2.70
No. 1 Kraft	2.80	@	3.00
Sulphate—			
Bleached	3.90	@	4.00
(F. o. b. Pulp Mill.)			
Sulphite (Domestic)—			
Bleached	4.40	@	4.75
Strong unbl'chd.	2.80	@	3.00
Easy Bleaching Sulphite	2.80	@	3.10
News Sulphite	2.60	@	2.80
Mitscherlich	2.85	@	3.15
Kraft (Domestic)	2.75	@	3.00
Soda Bleached	4.25	@	4.50

Domestic Rags

New

Prices to Mill, f. o. b. N. Y.

Shirt Cuttings—			
New White, No. 1	11.25	@	11.75
New White, No. 2	6.50	@	7.00
Silesias, No. 1	6.25	@	6.75
New Unbleached	9.00	@	9.50
Washables	4.00	@	4.25
Fancy	5.00	@	5.50
Cotton—according to Grades—			
Blue Overall	5.50	@	6.00
New Blue	4.75	@	5.00
New Black Soft	5.50	@	6.00
New Light Seconds	2.75	@	3.00
O. D. Khaki Cuttings	3.75	@	4.25
Men's Corduroy	2.75	@	3.00
New Canvas	7.00	@	7.25
New Black Mixed	2.50	@	2.75
Old			
White, No. 1—			
Repacked	6.50	@	6.75
Miscellaneous	5.50	@	6.00
White, No. 2—			
Repacked	3.25	@	3.50
Miscellaneous	2.75	@	3.00
St. Soiled White	1.65	@	1.75
Thirds and Blues—			
Repacked	1.75	@	1.85
Miscellaneous	1.45	@	1.55
Black stockings	2.90	@	3.25
Roofing Rags—			
Cloth Strippings	1.25	@	1.35
No. 1	1.25	@	1.35
No. 2	1.20	@	1.25
No. 3	.85	@	.95
No. 4	.85	@	.95
No. 5A	1.00	@	1.10

Foreign Rags

New Light Silesias	6.00		nominal
Light Flannelettes	6.75		nominal
Unbl'chd Cottons	7.50		nominal
New White Cuttings	9.50		nominal
New Light Oxfords	6.00		nominal
New Light Prints	4.50		nominal
New Mixed Cuttings	2.00	@	2.50
New Dark Cuttings	1.90	@	2.10
No. 1 White Linens	9.00	@	11.00
No. 2 White Linens	6.50		nominal
No. 3 White Linens	5.00		nominal
No. 4 White Linens	3.50		nominal
Old Extra Light Prints	2.00		nominal
Ord. Light Prints	1.75		nominal
Med. Light Prints	1.50		nominal
Dutch Blue Cottons	1.85		nominal
German Blue Cottons	1.60	@	1.70
Ger. Blue Linens	3.50		nominal
Checks and Blues	1.50		nominal
Dark Cottons	1.30	@	1.35
Shoppery	1.00	@	1.05
French Blues	1.75	@	2.00

Bagging

Prices to Mill f. o. b. N. Y.

Gunny No. 1—			
Foreign	1.00	@	1.10
Domestic	1.00	@	1.10
Wool, Tares, light	1.45	@	1.55
Wool, Tares, heavy	1.40	@	1.50
Bright Bagging	1.10	@	1.25
No. 1 Scrap	1.00	@	1.15
Sound Bagging	.85	@	.95
Manila Rope—			
Foreign	5.75	@	6.00
Domestic	6.00	@	6.25
New Bu. Cut	2.25	@	2.45
Hessian Jute Threads—			
Foreign	2.25	@	2.50
Domestic	2.20	@	2.40
Mixed Strings	.90	@	1.00

Twines

Cotton—(F. o. b. Mill)			
No. 1	.35	@	.37
No. 2	.31	@	.33
No. 3	.37	@	.39
India, No. 6 basis—			
Light	.20	@	.21
Dark	.19	@	.20
B. C., 18 Basis	.41	@	.42
A. B. Italian, 18 Basis	.51	@	.61
Finished Jute—			
Light, 18 basis	.26	@	.27
Dark, 18 basis	.29	@	.30
Jute Wrapping, 3-6 Ply—			
No. 1	.23	@	.24
No. 2	.21	@	.22
Tube Rope—			
4-ply and larger.	.15	@	.17
Fine Tube Yarn—			
5-ply and larger.	.19	@	.21
4-ply	.20	@	.22
3-ply	.20	@	.22
Unfinished India—			
Basis	.16	@	.17
Paper Makers Twine Balls	.13	@	.15
Box Twine, 2-3 ply	.18	@	.19
Jute Rope	.21	@	.24
Amer. Hemp, 6	.33	@	.35
Sisal Hay Rope—			
No. 1 Basis	.15	@	.17
No. 2 Basis	.13	@	.15
Sisal Lath Yarn—			
No. 1	.14	@	.15
No. 2	.11	@	.13
Manila Rope	.18	@	.19

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, White, No. 1	4.00	@	4.25
Hard, White, No. 2	3.75	@	4.00
Soft, White No. 1	3.75	@	4.00
Flat Stock—			
Stitchless	2.65	@	2.80
Over Issue Mag.	2.70	@	2.85
Solid Flat Book	2.60	@	2.70
Crumpled No. 1	2.10	@	2.25
Solid Book Ledger	3.10	@	3.25
Ledger Stock	2.25	@	2.50
New B. B. Chips	.65	@	.70
Manilas—			
New Env. Cut	2.50	@	2.75
New Cut No. 1	2.00	@	2.10
Extra No. 1, Old	1.55	@	1.65
Print	1.10	@	1.20
Container Board	1.00	@	1.10
Bogus Wrapper	1.05	@	1.15
Old Krafts, machine compressed Bales	2.35	@	2.50
News—			
No. 1 White News	2.30	@	2.35
Strictly Overissue	1.40	@	1.50
Strictly Folded	1.25	@	1.35
No. 1 Mixed Paper	1.10	@	1.20
Common Paper	.70	@	.75

CHICAGO

[FROM OUR REGULAR CORRESPONDENT]

Paper

F. o. b. Mill

All Rag Bond	35	@	40
No. 1 Rag Bond	30	@	35
No. 2 Rag Bond	18	@	25
Water Marked Sulphite	10	@	14
Sulphite Bond	9½	@	12
Sulphite Ledger	12	@	14
Superfine Writing	18	@	24
No. 1 Fine Writing	14	@	22
No. 2 Fine Writing	12	@	20
No. 3 Fine Writing	9	@	12
No. 1 M. F. Book	6¾	@	7¼
No. 1 S. & S. C. Book	7	@	8½
Coated Book	8½	@	12½
Coated Label	8¼	@	9½
News—Rolls, mill	4¼	@	4½
News—Sheets, mill	3¾	@	4¾
No. 1 Manila	4½	@	6
No. 1 Fiber	5	@	5¼
No. 2 Manila	4½	@	5
Butchers' Manila	4	@	4½
No. 1 Kraft	7	@	7½
No. 2 Kraft	6½	@	7
Wood Tag Boards	4½	@	5
Screenings	3½	@	4
Boards, per ton—	All quotations withdrawn		
Plain Chip			
Solid News			
Manila Lined Chip			
Container Line—			
85 Test			
100 Test			

Old Papers

Shavings—			
No. 1 Hard White	4.25	@	4.50
No. 1 Soft Shav.	3.75	@	4.00
No. 1 Mixed	1.85	@	2.00
No. 2 Mixed	1.75	@	1.90
White Envel. Cuttings	4.25	@	4.50
Ledgers and Writings	2.65	@	2.75
Solid Books	2.55	@	2.65
No. 1 Books, light	2.00	@	2.25
Blanks	2.00	@	2.25
Ex. No. 1 Manila	2.40	@	2.60
Manila Envelope Cuttings	2.50	@	2.65
No. 1 Manilas	1.75	@	2.00
Folders News (over issue)	1.40	@	1.50
Old Newspaper	1.35	@	1.45
Mixed Papers	1.25	@	1.50
Straw Clippings	1.25	@	1.50
Binders Clippings	1.25	@	1.50
Kraft	2.40	@	2.60
New Kraft Cuts	2.50	@	2.60
Roofing Stock, f. o. b. Chicago, Net Cash—			
No. 1	32.00	@	—
No. 2	30.00	@	—
No. 3	28.00	@	—
No. 4	28.00	@	—

PHILADELPHIA

[FROM OUR REGULAR CORRESPONDENT]

Paper

Bonds	.10	@	.60
Ledgers	.15	@	.40
Writings—			
Superfine	.15	@	.20
Extra fine	.12	@	.22
Fine	.20	@	.30
Fine, No. 2	.20	@	.25
Fine, No. 3	.15	@	.20
Book, M. F.	.06	@	.09
Book, S. S. & C.	.08	@	.15
Book, Coated	.08	@	.15
Coated Lithograph	.10	@	.15
Label	.08	@	.15
News	.05	@	.07
No. 1 Jute Manila	.12	@	.13
Manila Sul., No. 1	.08	@	.08½
Manila No. 2	.07½	@	.08
No. 2 Kraft	—	@	.08½
No. 1 Kraft	—	@	.09½
Common Bogus	.02½	@	.03
Straw Board	67.50	@	70.00
News Board	58.00	@	
Chip Board	58.00	@	
Wood Pulp Board (Carload Lots)	1.20	@	1.25
Binder Boards—			
Per ton	80.00	@	
Carload lots	80.00	@	
Tarred Felts—			
Regular	48.00	@	50.00
Slaters	54.00	@	56.00
Best Tarred, 1-ply (per roll)	1.35	@	1.50
Best Tarred, 2-ply (per roll)	1.00	@	1.15
Best Tarred, 3-ply	1.50	@	1.65

Bagging

F. o. b. Phila.

Gunny No. 1—			
Foreign	1.10	@	
Domestic	1.10	@	
Manila Rope	5.25	@	5.75
Sisal Rope	.75	@	.80
Mixed Rope	.75	@	.80
Scrap Burlaps	1.00	@	1.25
Wool Tares, heavy	2.50	@	2.75
Mixed Strings	.75	@	.80
No. 1, New Lt. Burlap	1.75	@	2.00
New Burlap Cuttings	1.75	@	2.10

Old Papers

F. o. b. Phila.

Shavings—			
No. 1, Hard White	4.00	@	4.25
No. 2, Hard White	3.50	@	3.75
No. 1 Soft White	3.60	@	3.75
No. 2 Soft White	2.00	@	2.25
No. 1 Mixed	1.50	@	1.75
No. 2 Mixed	1.00	@	1.25

(Continued on page 74)

Imports and Exports of Paper and Paper Stock

(*Continued from page 68*)

Berregaard Company, by same, 200 bls.
J. Andersen & Co., by same, 750 bls.
American Woodpulp Corporation, Minnekahda, Hamburg, 1,225 bls.
Bulkley, Dimton & Co., E. C. Adams, Liverpool, N. S., 6,196 bls., 489 tons.
J. Andersen & Co., Stockholm, Gothenburg, 250 bls.
E. Naumburg, by same, 1,125 bls.
M. Gottesman & Co., Inc., by same, 1,000 bls.
E. M. Sergeant & Co., by same, 700 bls.
Price & Pierce, Ltd., by same, 800 bls.

BOSTON IMPORTS

WEEK ENDING OCTOBER 7, 1922

J. A. & W. Bird & Co., Otho, Buenos Aires, 273 bags, 15,015 ks. casein.
Crane Company, Barbadian, London, 27 bls. rags.
T. D. Downing & Co., by same, 56 bls. rags.
American Express Company, by same, 238 bls. rags
G. M. Graves & Co., by same, 41 bls. rags.
J. B. Moors & Co., by same, 41 bls. waste paper.
G. W. Wheelwright & Co., by same, 157 bls. waste paper.
Baring Bros. & Co., by same, 623 bls. waste paper, 32 coils old rope.
Brown Bros. & Co., by same, 287 coils old rope, 19 bls.

NEW ORLEANS IMPORTS

WEEK ENDING OCTOBER 7, 1922

E. J. Keller Company, Inc., Nacata, Antwerp, 213 bls. rags.
E. J. Keller Company, Inc., Kentucky, Havre, 206 bls. rags, 137 bls. bagging.

PHILADELPHIA IMPORTS

WEEK ENDING OCTOBER 7, 1922

Whalen Pulp & Paper Mills, M. Dolar, Port Alice, 340 bls. wood pulp, 48 tons.
Castle, Gottheil & Overton, Sensal, Konigsburg, 275 bls. wood pulp.
Castle, Gottheil & Overton, Mineral, Konigsburg, 190 bls. woodpulp.
Castle, Gottheil & Overton, Breedyk, Rotterdam, 1,187 bls. rags.
Castle, Gottheil & Overton, Maryland, Hamburg, 231 bls. rags.
E. J. Keller Company, Inc., Maryland, Bremen, 417 bls. rags.
E. J. Keller Company, Inc., Hanningtcn Court, Bordeaux, 1,630 bls. rags.
E. J. Keller Company, Inc., Manchester Port, Manchester, 77 bls. bagging.
E. J. Keller Company, Inc., Michigan, London, 165 bls. rags.
Corn Exchange National Bank, Anaconda, Antwerp, 97 bls. rags.
Goldman, Sachs & Co., by same, 123 bls. rags.
Castle, Gottheil & Overton, by same, 331 bls. rags.
E. Butterworth & Co., Inc., by same, 269 bags pickers.
S. Silberman, by same 926 bls. rags.
American Woodpulp Corporation, by same, 65 bls. rags.
D. J. Murphy, by same, 330 bls. rags.
Katzenstein & Keene, Inc., by same, 45 bls. rags.
M. O'Meara Company, by same, 674 bls. rags.
Castle, Gottheil & Overton, E. Dawn, Rotterdam, 1,974 bls. rags.
Irving National Bank, Editor, Havre, 52 coils old rope.

BALTIMORE IMPORTS

WEEK ENDING OCTOBER 7, 1922

Castle, Gottheil & Overton, Hannington Court, Bordeaux, 790 bls. rags.
Castle, Gottheil & Overton, Breedyk, Rotterdam, 93 bls. rags.
Katzenstein & Keene, Inc., Quaker City, Leith, 131 bls. rags.
Katzenstein & Keene, Inc., West Noska, London, 188 bls. rags.

BIDS AND AWARDS FOR GOVERNMENT PAPER

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 11.—The purchasing officer of the Government Printing Office has received the following paper bids:

1,000,000 lbs. 22½ x 28½—104 cream bristol board in 44½-inch rolls: The Champion Coated Paper Company, at $0.0749 per lb.; American Writing Paper Company, $.0729; Dill & Collins Company, $.0771; the Whitaker Paper Company, $.0734; Champion Fibre Company, $.0754.

106,800 lbs. various sizes sulphite manila paper, 18-inch rolls: Dobler & Mudge, $0.085 and $.095 per lb.; Maurice O'Meara Company, $.0629 and $.074; Wilkinson Bros. & Company, $.059 and $.065; the Whitaker Paper Company, $.0965 and $.0985; R. P. Andrews Paper Company, $.0697 and $.0747; Samuel S. Alcorn, $.0625 and $.0615; B. F. Bond Paper Company, $.0639; Carter Rice & Company, $.077 and $.0795; Old Dominion Paper Company, $.0798, and Paper Manufacturers Company, Inc., $.07 and $.09.

5,000 lbs. 25 x 38—50 M. F. salmon printing paper: R. P. Andrews Paper Company, $.11 per lb.; Dobler & Mudge, $.099, and Bryant Paper Company, $.0775.

2,300 lbs. 22½ x 28½—230 white index bristol board: Dobler & Mudge, $.195; R. P. Andrews Paper Company, $.24; Old Dominion Paper Company, $.209.

2,172 lbs. 22½ x 28½—181 salmon index bristol board: R. P. Andrews Paper Company, $.25; Old Dominion Paper Company, $.219.

36,500 lbs. best quality binders' board: Republic Bag & Paper Company, $.05125 per lb.; R. P. Andrews Paper Company, $.054; Denison-Pratt Paper Company, $.0574; Whitaker Paper Company, $.0598.

2,550 lbs. 17 x 28—25½ green glazed bond paper: Aetna Paper Company, $.1706 per lb.; Old Dominion Paper Company, $.189; Dobler & Mudge, $.225; R. P. Andrews Paper Company, $.174; Whiting-Patterson Company, Inc., $.18.

The purchasing officer of the Government Printing Office has received the following bids:

172,000 lbs. 38 x 48-inch—86 lbs. white S. and S. C. printing paper; Dobler & Mudge, $.0745 per lb.; Old Dominion Paper Company, $.8094; Bryant Paper Company, $.0737; Kalamazoo Paper Company, $.075; Maurice O'Meara Company, $.07.

10,000 fine white writing envelopes, 4-11/16 x 7⅛, 4¾ x 7⅛ inch: R. Carter Ballantyne, at $4.30 per M.; R. P. Andrews Paper Company, $13.94; United States Envelope Company, $6.80; Sherman Envelope Company, $3.07.

Bids will be opened at the Government Printing Office on October 16 for 1,000,000 lbs. of No. 1 white M. F. printing paper in 19-inch, 21-inch and 38-inch rolls. Bids will also be opened on the same date for 400,000 lbs. of white S. & S. C. printing paper in 38-inch rolls and for 2,000 lbs. of U. S. M. O. white writing paper, No. 16, in 8½-inch rolls.

The Bureau of Supplies and Accounts, Navy Department, has received the following bids for 285,000 3 x 6¼-inch linen shipping tags: R. P. Andrews Paper Company, at $4.28 a thousand; Dennison Manufacturing Company, at $3.80, $4.25 and $7.00; Ellis A. Gimble, $4.10¼; Old Dominion Paper Company, $4.31; J. H. Weil & Co., $4.57, and Whitaker Paper Company, $4.31.

Bids will be opened at the Government Printing Office on October 13 for 19,050 pounds (150 reams) of various sizes single coated book paper. Bids will also be opened on the same date for 40,400 pounds (1,000 reams) of wood manila paper and bids will be opened on October 16 for 1,725 pounds (150) reams of 17 x 28-inch—11½ No. 9 glazed yellow bond paper.

Encourage Waste Paper Collection

[FROM OUR REGULAR CORRESPONDENT]

CHILLICOTHE, Ohio, October 11, 1922.—The high prices now being paid for waste paper resulted in a unique school children's campaign in this city for the collection of paper to be worked over by the paper mills of this city, one feature of which was the awarding of a $20 prize to the boy who collected the largest amount of paper in a week. This boy collected 5,000 pounds which meant that with his prize money he earned a handsome sum for his week's work. The Chillicothe contest was instituted by a local dealer in waste paper, and the result was the collection of more paper than has been collected in this city in the preceding six months. Even so, the total collected was only enough to supply the paper mills of the locality for five hours.

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BLEACHED SULPHITE

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EASY BLEACHING SULPHITE

STRONG UNBLEACHED SULPHITE

"Hurum" "Bamble"

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"Edsvalla" 50% MOIST "Dejefors" DRY

WHITE SPRUCE—GROUND WOOD

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Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt probems.

KNOX WOOLEN COMPANY

CAMDEN, MAINE

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75-77 Duane St., N. Y., and direct

Miscellaneous Markets

OFFICE OF THE PAPER TRADE JOURNAL,
TUESDAY, OCTOBER 10, 1922.

BLEACHING POWDER.—The advanced price quotations which were announced last week in this market have held firm and some tendency has been exhibited toward further stiffening. The spot price of $1.80 per 100 pounds still obtains, while available supplies to bleach in drums are exceedingly scarce.

BLANC FIXE.—The demand in this market continues strong, and the price of $80 to $85 per ton on dry blanc fixe still rules in transactions with the paper making trade. Blanc fixe pulp shows ample signs of activity at the new price level of $50 to $55 a ton, works.

CAUSTIC SODA.—Production difficulties have caused the caustic market to assume an irregular tone, and these have been further intensified by the exorbitant fuel costs as well as the multiplicity of hazards in shipping the finished product. 60 per cent basis caustic is still quoted in the neighborhood of 2.70 cents a pound, works.

CHINA CLAY.—Dealers in this commodity report that considerable additional tonnages of English china clay are arriving at frequent intervals from production centers of the British Isles. As ships become more available for clay transport, the reaction should be felt in the domestic market, resulting in a slight relaxation in the price tension which has been sustained due to the excessive demands of American manufacturers at this season. Domestic unwashed clays are quoted at $6 to $8.50 per ton, washed at $8 to $11 and imported at $15 to $22.

CASEIN.—Casein prices are again heading toward normal as shipments of the South American product become more frequent. Argentine is coming into its summer season and the by-product, casein, is being produced in large quantities for export to this country. While current casein prices for spot shipment are still holding around 15 to 18 cents a pound, this price is frequently bettered for large quantity future orders.

LIQUID CHLORINE.—Both tank car and 100 pound cylinder lots of chlorine are registering a fair amount of activity at the firmer price of 5.00 to 6.00 cents a pound.

ROSIN.—The paper makers' grades of this naval store, E, F and G, have exhibited a rising price tendency commensurate with the advance in the price of various chemicals used in paper manufacture. Prices per barrel of 280 pounds, ex dock, New York, now average 6.50 cents a pound.

SALTCAKE.—Producers still refuse to quote on saltcake for either spot shipment or delivery within 60 days. Orders have been plentiful in this market, the only drawback being the extreme scarcity of supplies and the difficulties attending the manufacture of the chemical. Acid cake holds at $25 to $26 per ton, while chrome cake still retains the advanced price of $23 per ton, works.

STARCH.—This year's bumper corn crop is already having its effect in the easing off of the price tone for its various by-products. Paper manufacturers are, however, using considerable quantities of this commodity, paying, on the average, 2.57 cents a pound for bag lots. Powdered starch is still listed at 2.47 cents.

SULPHUR.—While other chemicals fluctuate both in price and demand, sulphur continues firm at its schedule listing of $18 to $20 per ton. Texas shipments are arriving regularly and the demand is steady.

SULPHATE OF ALUMINA.—Scarcity of bauxite continues to hamper aluminum sulphate production, and this, together with the coal scarcity, accounts largely for the recent increase in prices to 2.50 and 2.75 cents a pound on the iron free grade. Spot lots of commercial sulphate are quoted at 1.50 cents a pound and, in some cases, slightly higher.

Market Quotations

(*Continued from page 71*)

Solid Ledger Stock.	2.25	@	2.50
Writing Paper.....	2.00	@	2.25
No. 1 Books, heavy.	2.25	@	2.50
No. 2 Books, light.	1.40	@	1.50
No 1 New Manila.	2.75	@	3.00
No 1 Old Manila..	1.50	@	1.75
Container Manila,..	1.35	@	1.40
Old Kraft.....	2.25	@	2.50
Overissue News.....	150	@	1.60
Old Newspaper.....	1.20	@	1.25
No. 1 Mixed Paper.	1.10	@	1.15
Common Paper.....	.80	@	.90
Straw Board, Chip.	.80	@	.90
Binders Bd'. Chip..	.80	@	.90

Domestic Rags—New.
Price to Mill, f. o. b. Phila.

Shirt Cuttings—			
New White, No. 1.	11¼	@	.11¾
New White, No. 2	.06	@	
Silicias, No 1....	.06½	@	.07
New unbleached..	.10¾	@	
Washables	.03¾	@	
Fancy	04¾	@	.05¾
Cottons—according to grades—			
Blue Overall....	.05½	@	.05¾
New Blue.....	.02¾	@	.02¾
New Black Soft.	.06¼	@	.06½
New Light Seconds	.02¾	@	.02¾
Khaki Cuttings..	.03½	@	.04½
Corduroy	.03½	@	.03¾
New Canvass.....	.07½	@	.08
New Black Mixed	.04	@	
Old White, No. 1—			
Repacked	.06	@	.06½
Miscellaneous ...	.04½	@	.04¾
White, No. 2—			
Repacked	.03	@	.03½
Miscellaneous ...	.03	@	.03¾
Thirds and Blues—			
Repackeed	200	@	2.25
Miscellaneous ...	1.85	@	1.90
Black Stockings....	2.75	@	3.00
Roofing Stock—			
No. 1.....	1.30	@	1.35
No 2.....	1.20	@	1.25
No 3.....	1.10	@	1.15
No. 4.....	110	@	1.15
No. 5A.....	1.05	@	110
B.....			nominal
C.....			nominal

BOSTON

[FROM OUR REGULAR CORRESPONDENT]

Paper

Bonds	.08½	@	.65
Ledgers	.09	@	.55
Writings	.08	@	.42
Superfine	.15	@	.22½
Fine	.15	@	.18
Books, S. & S. C...	.07½	@	.12
Books, M. F.....	.06½	@	.10
Books, coated	.09	@	.16
Label	.08½	@	.13
News, sheets.....	4.50	@	4.75
News, rolls.....	4.00	@	4.25
Manilas—			
No. 1 Manila...$5.50		@	7.00
No. 1 Fiber.....	.07½	@	
No. 1 Jute.....10.50		@	12.50
Kraft Wrapping....	.06½	@	.12
Common Bogus....	3.00	@	3.50

Boards

(Per Ton Destination)

Chip $60.00		@	65.00
News, Vat Lined...62.50		@	65.00
Wood, Vat Lined...70.00		@	
Filled News Board..62.50		@	65.00
Solid News Board..70.00		@	75.00
S. Manilla Chip...70.00		@	75.00
Pat. Coated 85.00		@	92.50

Old Papers

Shavings—			
No. 1 Hard White	4.25	@	4.50
No. 1 Soft White	3.30	@	3.45
No. 1 Mixed....	1.50	@	1.75
Ledgers & Writings	1.75	@	2.00
Solid Books	2.40	@	2.50
Blanks	1.70	@	1.80
No. 2 Light Books.	1.75	@	1.80
Folded News, overissues 22.00		@	25.00
Gunny Bagging ...	.85	@	.90
Manila Rope.....	5.75	@	6.00
Common Paper....	.80	@	.90
Old News.....	.80	@	.90
Old Kraft	2.00	@	2.25

TORONTO

[FROM OUR REGULAR CORRESPONDENT]

Paper

(Mill Prices to Jobbers f. o. b. Mill)

Bond—			
Sulphite	.11	@	.12½
Light tinted.....	.12	@	.13½
Dark tinted.....	.13½	@	.15
Ledgers (sulphite).	—	@	.13
Writing	.09½	@	.12
News, f. o. b. Mills—			
Rolls (carloads)..	3.50	@	
Sheets (carloads).	—	@	4.25
Sheets (2 tons or over)	—	@	4.50
Book—			
No. 1 M. F. (carloads)	9.00	@	—
No. 2 M. F. (carloads)	8.00	@	—
No. 3 M. F. (carloads)	7.50	@	—
No. 1 S. C. (carloads)	9.50	@	—
No. 2 S. C. (carloads)	8.50	@	—
No. 1 Coated and litho. 14.00		@	—
No. 2 Coated and litho. 13.00		@	—
No. 3 Coated and litho. 12.25		@	—
Coated and litho., colored 14.25		@	—
Wrapping—			
Grey	4.50	@	—
White Wrap	5.00	@	—
"B" Manila	5.50	@	—
No. 1 Manila ..	6.75	@	—
Fiber	6.75	@	—
Kraft, M. F.	8.00	@	—
M. G.	8.15	@	—

Pulp

(F. o. b. Mill)

Ground wood.....$28.00		@	35.00
Sulphite easy bleaching 65.00		@	70.00
Sulphite news grade.60.00		@	65.00
Sulphite, bleached..95.00		@	100.00
Sulphate 75.00		@	

Old Waste Papers

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut..	3.75	@	—
Soft White Book Shavings	3.75	@	—
White Bl'k News	2.00	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	2.25	@	—
Light and Crumpled Book Stock.	2.10	@	—
Ledgers and Writings	2.50	@	—
Solid Ledgers...	1.95	@	—
Manilas—			
New Manila Cut.	2.00	@	—
Printed Manilas..	1.55	@	—
Kraft	2.50	@	—
News and Scrap—			
Strictly Overissue	.90	@	—
Folded News....	.80	@	—
No. 1 Mixed Papers	.70	@	—

Domestic Rags—
Price to mills, f. o. b. Toronto.

	Per lb.		
No. 1 White shirt cuttings	.11¼	@	.11½
No. 2 White shirt cuttings	.06½	@	—
Fancy shirt cuttings	.06	@	.06¼
No. 1 Old whites	.04	@	—
Thirds and blues	.02	@	.02½
	Per cwt.		
Black stockings..	2.50	@	—
Roofing stock:			
No. 1.....	1.50	@	—
No. 2.....	1.40	@	—
Roofing stock:			
Manila rope.....	.06	@	.06¼
No. 2.....	.01½	@	—
Gunny bagging....	1.00	@	1.25

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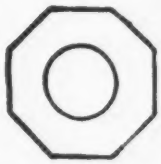

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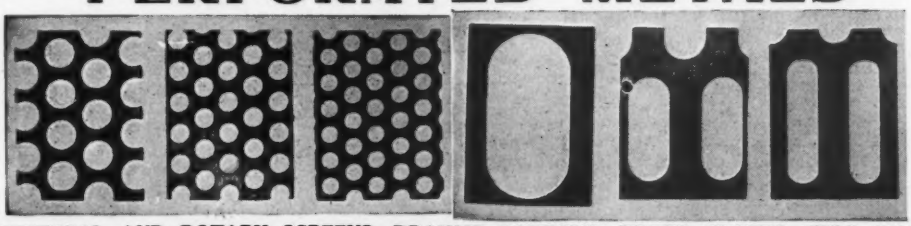

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HELP WANTED

WANTED—Boss Machine Tender. Must be capable, thoroughly experienced, give results and willing to prove himself on two Cylinder Machines making Bristol Boards. Good opportunity with chance of advancement. State experience, send copies of references in first reply. Address, Box 5426, care Paper Trade Journal. O-26

WANTED—Paper Boxboard also Container Board Salesman. Young man ambitious and efficient. State experience and salary desired. Address, C. L. LaBoiteaux Company, Cincinnati, Ohio. O-12

WANTED—Paper Boxboard Salesman for New York City Trade. Address, C. L. LaBoiteaux Company, Suite 914 Borden Bldg., 350 Madison Avenue, New York City. O-12

WANTED—For a Fifteen Ton Binders Board Mill, a practical foreman to look after the manufacturing end. Must be capable, submitting references and past record of making No. 1 Binders Board. No mechanical responsibility. Address, Box 5463, care Paper Trade Journal. O-12

WANTED—A competent Mill Wright to take care of repairs for Two Machine Tissue Mill. Reply immediately. Address, Box 5464, care Paper Trade Jaurnal. O-26

WANTED—Capable Beater and Machine Room Help for new modern Paper Mill located in large Midwest City. Excellent opportunity for steady experienced men. Machine operating 500 feet. Three shifts. Write giving full details and references. Address, Box 5467, care Paper Trade Journal. O-12

WANTED—Machine Tender, Beater Engineer and Cutterman for M. F. Book Mill. Furnish references with reply. Address, Box 5468, care Paper Trade Journal. O-19

MACHINE TENDER for Fourdrinier, also one for Cylinder Tissue Machine, for Pacific Coast. Give full particulars about yourself. Address, Box 5440, care Paper Trade Journal. O-12

WANTED—First Class Machine Tenders, on Harper Fourdrinier with Edwards Attachment, making high grade waxing papers from 15 to 30 pounds. Only men able to keep up machine and get production and quality need apply. Address, Box 5485, care Paper Trade Journal O-12

WANTED—3 experienced Back Tenders for Book and Bond Papers. Lybster Mill of Lincoln Mills, Limited, Merritton, Ont. O-12

WANTED—Machine tender for 96" Machine making Book, Bond and Writings. None but first class man need apply. Address, Box 5441, care Paper Trade Journal. O-12

PAPER SALESMAN—New York City, who can produce large amount of business. Will manage sales force, represent mill agency, company or mill. Drawing account on commission basis. Address, Box 5486, care Paper Trade Journal. tf

WANTED AT ONCE

for Board Mill one first class Beaterman, two first class Back Tenders and one Machine Tender. Give age, references, experience and where last employed in first letter. Address, National Paper Products Company, Stockton, California. O-19.

HELP WANTED

WANTED AT ONCE—Assistant Superintendent to take charge of one Machine Board Mill nights, making 25 tons Newsboard, Tag and Colored Stock. Steady work with future for man who can work hard and get results. State references, wages expected and how soon you could report, in first letter. Address, Box 5443, care Paper Trade Journal. O-12

WANTED—Finishers and Back Tenders. Two Tower News and Chip Board Mill. Eastern State. Address, Box 5505, care Paper Trade Journal. O-12

WANTED—Machine Tender, for small Cylinder Tissue Machine. Elderly man preferred. Address, Box 5508, care Paper Trade Journal. O-19

WANTED—One Draftsman for Paper Mill Machinery Design. Address, Box 5509, care Paper Trade Journal. O-12

SALES MANAGER WANTED—We want a City Sales Manager, who is familiar with the Paper and Twine Business and can sell Paper and Twine as well as direct other salesmen. The Union Selling Company, 210 Walnut Street, Cincinnati, Ohio. O-12

WANTED—Night Superintendent to take charge of mill making book and bond and ledgers. State fully your qualifications and give references in first letter. Address reply to Box 5487, care Paper Trade Journal. O-19

WANTED—3 Machine Tenders and one Beater Engineer to run machines and beaters making book, bond and ledger. Only first class men with experience making these papers need apply. Address reply to Box 5488, care Paper Trade Journal. O-19

WANTED—First Class Fourdrinier Man for night superintendent. Advise full particulars as to experience and give references in first letter. Address, Box 5489, care Paper Trade Journal. O-12

WANTED—First class back tenders and winder men for Fourdrinier running 300 feet. Advise full particulars as to experience and give references in first letter. Address, Box 5490, care Paper Trade Journal. O-12

WANTED—Superintendent who thoroughly understands a Harper Machine, manufacturing tissues and light weights. Must understand thoroughly the preparing of stock and also the steam end. Mill located in good city. Copies of references must accompany application. No drinkers need apply. Address, Box 5498, care Paper Trade Journal. O-19

SITUATIONS WANTED

WANTED—Position as cylinder machine tender. Have had ten years' experience on chip news, manilas and Patent Coated. Address, Box 5474, care Paper Trade Journal. O-19

CHEMIST AND CHEMICAL ENGINEER with previous experience in Sulphite and Paper Mills, is open for engagement. Now employed. Good references. Address, Box 5475, care Paper Trade Journal. O-19

BOSS FINISHER of wide experience in Box Boards, Book, Bond and all Cylinder and Fourdrinier Specialties. Seeks engagement with good mill that will appreciate a practical leader who can get production and has a thorough knowledge of Finishing Equipment. Address, Box 5476, care Paper Trade Journal. O-19

SUPERINTENDENT wants position; have life time experience in the paper business. Making Light Waxing Bond, Book, Kraft, Wrapping Board, Colors on Fourdrinier, Harpers, and Cylinders. Address, Box 5477, care Paper Trade Journal. O-12

SITUATIONS WANTED

YOUNG LADY, 22, at present employed by well known retail paper concern, desires to make a change. Have held responsible position as bookkeeper, managing and office work. Full knowledge of paper lines. Best references. Address, Box 5484, care Paper Trade Journal. O-12

BOSS FINISHER residing in vicinity of New York City is open for engagement in Coating Mill making Book, Lithographic, Glazed, Embossed Fancy Papers and Coated Specialty. Address, Box 5431, care Paper Trade Jouranl. O-12

MASTER MECHANIC with a large experience in construction, reconstruction and efficiency, desires to make change. Address, Box 5383, care Paper Trade Journal. tf

SUPERINTENDENT: Now employed desires to make change. Well up on all grades of Board. Can handle help and get production. Can handle own repairs and construction. Address, Box 5409, care Paper Trade Journal. O-12

WANTED: By a New York Manager and Representative of an out of town Manufacturer of Toilet Paper and Paper Towels, similar connection with reputable manufacturer. Have been in the line over 20 years, over 15 years of which I have spent with my concern. Address, Box 5114, care Paper Trade Journal. O-12

SALESMAN — Ten years' experience as paper Broker, Coated, Book and Fine. Wants to make new connections, for Philadelphia District. Address, Box 5444, care Paper Trade Journal. O-12

MILL CONNECTION WANTED by young man with several years' experience in manufacture and sale of Wood Pulp, Wrapping, Waxed Papers, and Paper Specialties. Will open office to represent mills and sell on commission basis in New England. Address, Box 5445, care Paper Trade Journal. O-12

POSITION WANTED—Young man with several years' experience with manufacturers and jobbers of paper would like position as manager of mill. Address, Box 5446, care Paper Trade Journal. O-12

SALESMAN with University and Practical Education, 36 years old, wishes to affiliate with mill making bonds, writings and envelope stocks. To travel the middle west or Pacific Coast. Address, Box 5448, care Paper Trade Journal. O-12

PURCHASING AGENT open for engagement. Fifteen years paper mill experience, ten years with one of largest Paper Mills in the country. References furnished from present employer. Address, Box 5449, care Paper Trade Journal. O-12

PULP AND PAPER CHEMIST with thorough technical training and twelve years' practical experience with present employers, wishes to change to progressive company desiring to improve efficiency of manufacturing operations. Competent to organize and direct technical department for testing, control of mill operations, experimental and research work. Address, Box 5452, care Paper Trade Journal. O-19

MANUFACTURERS of Book, Writing and Sulphite Bond. If it was proven to your personal satisfaction that the tonnage of your plant could be increased 15 to 25 per cent without lowering your particular standard of quality, but with actual saving in fuel and power costs, would you be interested? If so, a progressive papermaker invites your inquiry. Experienced in eliminating troublesome manufacturing conditions and defects. Object in view not necessarily a position, but your good will would be appreciated. Address, Box 5503, care Paper Trade Journal. O-26

MAN with sound Paper Mill experience in Accounting, Costs, Office Management, Organization and Production Methods, seeks responsible position. Address, Box 5507, care Paper Trade Journal. N-2

XUM

SITUATIONS WANTED

YOUNG MAN with fine and coarse paper experience to act as representative on Pacific Coast. Present location, Seattle. Can furnish references. Address, Box 5504, care Paper Trade Journal. O-12

CHEMIST OR DRAFTSMAN—Graduate of Swedish High School. 3 years' experience on Sulphite and Pulp. Seeks connection with good Mill. Swedish, 28 years old. Best references. Address, Box 5506, care Paper Trade Journal. O-19

BEATER ENGINEER would like to make a change. Have had experience on all grades of Box Board, Bond, Ledger and 3 years' experience on color, specialties. Would like to connect with a mill that would run steady. I am 36 years old. Married and steady. Address, Box 5502, care Paper Trade Journal. O-26

TECHNICAL ADVISER & PAPER MAKER, young man, 32 years of age; technical education, 10 years' experience covering Physical and Chemical Testing of Pulps and Paper, Chemicals, etc.; Experimental and Development Work on Cotton Linters, Long Leaf Pine, Sugar Cane (Bagasse), etc. Have a thorough knowledge of Pulp and Paper Machinery and Operation of same. If you have a position open in your organization which requires technical and practical knowledge of Paper Making Processes let me confer with you personally regarding my experience, ability, etc. Best of references. Open October 1st. Address, Box 5458, care Paper Trade Journal. O-12

SUPERINTENDENT of ability, now employed, desires to make change. Twenty-five years' experience on all grades of board. Expert on colors. Can handle repairs and get production. Address, Box 5455, care Paper Trade Journal. O-12

SUPERINTENDENT open for engagement November 1st. Mill making Combination or Test Board. Progressive and efficient. Will consider any reasonable proposition anywhere. Address, Box 5491, care Paper Trade Journal. O-12

SITUATION WANTED—General millwright, foreman, with years of practical experience, wishes a position in some good board mill. Address, Box 5496, care Paper Trade Journal. O-12

MISCELLANEOUS

WANTED: BOX BOARD MACHINE

Trim preferred 116" or wider. Must be in excellent condition. Give full description of machine and equipment, and price f. o. b. cars shipping point. Address Box 5497, care Paper Trade Journal.

O—19

MISCELLANEOUS

In the Matter of the Great Eastern Paper Company, Limited, Authorized Assignor.

TIMBER LIMITS, PULP AND SAW MILLS

NOTICE OF SALE BY TENDER

NOTICE IS HEREBY GIVEN that, pursuant to the Bankruptcy Act, The Royal Trust Company, Montreal, as Authorized Assignee of the property of the Great Eastern Paper Company, Limited, Authorized Assignor, duly authorized for the purpose, offers for sale by tender all the moveable and immoveable property of the Authorized Assignor, including approximately 1400 acres of freehold timber lands situated in the Township of Denoue, in the County of Gaspe, in the Province of Quebec, being Blocks "B" and "C" of the said Township; 450 square miles more or less of timber limits under license from the Crown, consisting of Limits River Magdalen Nos. 2, 3, 4, 5 and 6 North, Limits River Magdalen Nos. 1, 2 and 3 South, Limits River Pierre and Claude No. 29, Township of Taschereau No. 30 and Township of Denoue No. 19, together with water powers, saw mill, (Pulp mill partially damaged by fire), machinery, equipment, stock, stores, supplies and provisions, and all the issued capital stock of the Magdalen River Valley Railway Company. All open for inspection.

The sale is to be subject to all existing contracts and a reserve of all accounts receivable and cash on hand.

Tenders for the above will be received by The Royal Trust Company, as Authorized Assignee, up to and including the 3rd day of November, 1922.

The sale will be made en bloc for cash and any intending purchaser must enclose with his tender as a deposit an accepted cheque of a Chartered Bank in Canada, to the order of The Royal Trust Company, as Authorized Assignee for a sum equal to ten per cent. of the amount of the tender, which deposit, in the event of the acceptance of the tender, will be applied on account of the purchase price, and if the tender is not accepted will be returned. Should any purchaser whose offer has been accepted fail to comply with the conditions of the sale or to pay the full amount of the purchase price within one week from the acceptance of his tender, then, in such event, the said deposit shall be forfeited and shall belong absolutely to The Royal Trust Company, as Authorized Assignee, as liquidated damages.

The Authorized Assignee shall not be bound to accept the highest or any tender.

Information may be obtained by application to the undersigned.

THE ROYAL TRUST COMPANY,
Authorized Assignee,
105 St. James Street, Montreal.
0-26

MISCELLANEOUS

SHARTLE

can fill your requirements in used or new machinery.

THE SHARTLE BROTHERS MACHINE CO.
Middletown Ohio

TF.

A well known and long established Firm in Sweden, with excellent Pulp Mill connections in Scandinavia, desires to be represented in United States. We desire a party who is well acquainted with users and buyers of high grade pulps. Address, Box 5439, care Paper Trade Journal. O-12

Rebuilt Paper Mill Machinery

In Stock and Guaranteed

Not Where Is and As Is

FOURDRINIER TISSUE MACHINE—One 68"
FOURDRINIER PARTS—Pusey & Jones 118", 100". Kutter Trowbridge 96"
PRESS PARTS FOR PAPER MACHINES—Pusey & Jones bell crank housing with rolls 18" x 117". Black & Clawson swing arm housing.
DRYERS—Four 48" x 111", one 36" x 80", two 36" x 73", four 48" x 68", one 84" x 67", eleven 42" x 66", two 36" x 48", four 20" x 39".
CHILLED CALENDERS—One 86" six roll, one 82" five roll, one 66" five roll, one 54" five roll, two 58" five roll.
DILLON DOCTOR—For machine calender 60" to 144" face.
SLITTERS & WINDERS—One 120" Warren, one 108" Kidder, one 110" two drum Moore & White.
REELS—Pusey & Jones two drum, Rice, Barton & Fales two drum.
BEATERS—Four N. & W. 72" x 42", one Dilts 62" x 50" iron tub, one Jones 62" x 52", one Dillon 60" x 48", two Emerson 54" x 60", three Downingtown 54" x 42" iron tub, two Emerson 53" x 52", seven Horne 36" x 36", two No. 2 Claflins, two No. 1 Claflins. One 36" x 26" N. & W.
JORDANS—One Appleton Wagg Majestic, two No. 2 Dillon Improved, one Large Horne, two Monarch, one Jones Standard, one Pope brushing engine.
SCREENS—Two 12 plate, two 8 plate, open side Packer screens. Two 6 plate, one Moore & White auxiliary.
STUFF PUMPS—Deane triplex 9" x 8", Goulds triplex 8" x 10", Sandusky triplex 4" x 6", Moore & White duplex 8" x 12", One Beloit duplex 6" x 14". Two 6" Post.
REVOLVING SHEET CUTTERS—One 82" and 62" Clark, five 61" Hamblets, four 61" Finlays, one 50" Hamblet diagonal, one 42" Finlay.
REAM CUTTERS—One 48" Acme, one 45" Holyoke Seybold.
SUPER CALENDERS—One 52" Holyoke, one 45", one 42", one 36".
WET MACHINES—Four 72" Bagley & Sewall Hydraulic, one 48" Noble & Wood. One Manistee Hog Chipper. One Ryther & Pringle Shredder. We have a large number of pumps and over five hundred calender, press and couch rolls in stock.

FRANK H. DAVIS COMPANY
175 Richdale Ave., Cambridge 40, Mass.

SITUATION WANTED

AN EXECUTIVE SALESMAN of high capacity, college graduate, nine years' thorough experience with paper industry, desires connection with a progressive house. Possesses knowledge of law. Address, Box 5483, care Paper Trade Journal. O-12

SALESMAN—38 years of age, successful sales record in handling the output of rope and jute papers, direct from mill. Correspondence solicited along this line or on paper mill equipment. Thoroughly versed in mechanical engineering principles. Address, Box 5492, care Paper Trade Journal. O-12

WELL EDUCATED YOUNG MAN with 12 years' practical experience, wishes position as superintendent, assistant superintendent or assistant manager, with any reliable concern. Will go anywhere. Have specialized on the making of paper for the manufacture of Hard fibre products, with very good results. Address, Box 5493, care Paper Trade Journal. N-2

WANTED—Position as assistant or tour foreman with a mill desiring a practical man with twenty years' machine experience on sulphite and rag papers. Married, ambitious, good references. Address, Box 5494, care Paper Trade Journal. N-9

YOUNG MAN having had several years' mill office experience, desires to connect with new organization as assistant to superintendent where there is good opportunity for advancement. Can furnish A-1 references as to ability. Address, Box 5495, care Paper Trade Journal. O-26

FOR SALE

FOR SALE—One Cotrell, 2-revolution Press; in first class running order; price reasonable. Apply to Sniersen Bros., Inc., 63 Washington St., No. Boston, Massachusetts. O-12

FOR SALE—Deane Duplex Fire Pump, 14x 8½x10, capacity 600 gallons per minute. Address, Box 5482, care Paper Trade Journal. tf

FOR SALE—6 Farnum Drives. Complete Triple-Deck frames for 44 Dryers. Will arrange terms to suit. Chesapeake Paper Board Co., Baltimore, Maryland. tf

We have the following Fourdrinier Paper Machine Felts for sale:

3—38x82 First Press Felts. Mfd. by F. C. Huyck & Son.

5—36x82 Second Press Felts. Mfd. by Albany Felt Co.

1—36x82 First Press Felts. Mfd. by Albany Felt Co.

2—38x82 First Press Felts. Mfd. by Albany Felt Co.

All of the above felts are brand new and have never been taken from original wrapper. We guarantee the above felts to be absolutely perfect in every way. We are offering same at 40% discount from regular list price. Wire us your order.

HOLDEN PAPER COMPANY, Newburg, N. Y.

FOR SALE

FOR SALE—One "Sheridan," new model, 36-inch Guillotine Automatic Paper Cutter, belt driven, with one extra knife and fifteen cutter knife sticks. Address, Box 5433, care Paper Trade Journal. O-12

MISCELLANEOUS

WANTED—One second hand Satchel Bottom Charcoal Bag Machine. Give full information and price. Address, Box 5499, care Paper Trade Journal. O-12

WANTED—One Satchel Bottom Charcoal Bag Folding Machine to make bags from sheets. Address, Box 5500, care Paper Trade Journal. O-12

WANTED TO PURCHASE—A second-hand Roll Wrapping Paper Printing Press. State price, location and all details in first reply. Address, Box 5501, care Paper Trade Journal. O-12

SAN FRANCISCO OFFICE, well established, selling paper and paper specialties on Pacific Coast and Export, desires representation, Eastern Manufacturers' Paper Specialties. Address, Box 5480, care Paper Trade Journal. O-26

FOURDRINIER MACHINE WANTED—State size, condition, and price fully and where can see machine. Price must be f.o.b. cars. Address, Box 5455, care Paper Trade Journal. O-12

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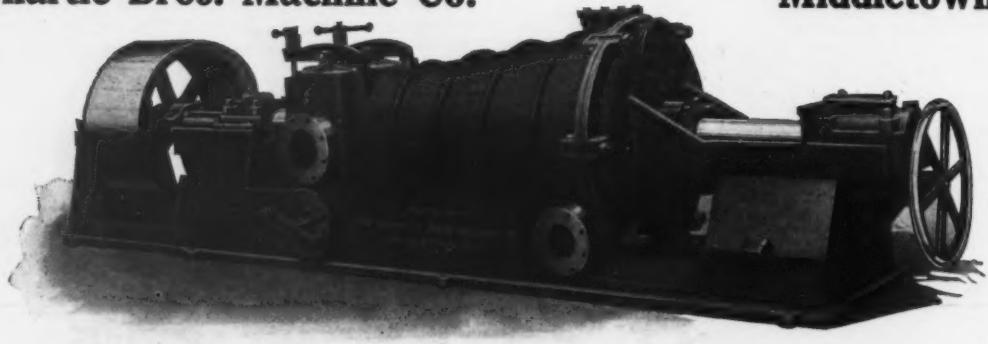

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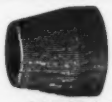

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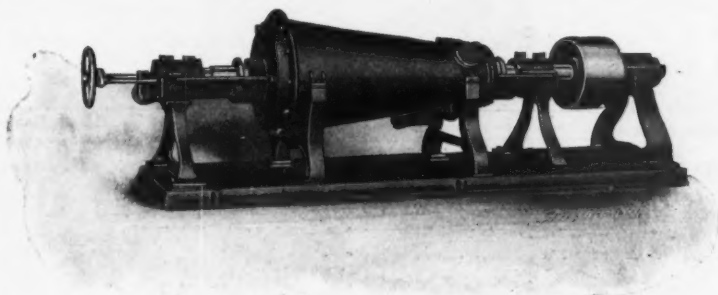
Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of PAPER TRADE JOURNAL, published weekly at New York, N. Y., for October 1, 1922.—State of New York, County of New York. Before me, a notary public in and for the State and County aforesaid, personally appeared Leslie R. Palmer, who having been duly sworn according to law, deposes and says that he is the business manager of the PAPER TRADE JOURNAL, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit: 1. That the names and addresses of the publisher, editor, managing editor, and business manager are:—Publisher, The Lockwood Trade Journal Co., Inc., 10 East 39th street, New York, N. Y.; editor, H. J. Berger, 10 East 39th street, New York, N. Y.; managing editor, H. J. Berger, 10 East 39th street, New York, N. Y.; business manager, Leslie R. Palmer, 10 East 39th street, New York, N. Y. 2. That the owners are (give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock): The Lockwood Trade Journal Co., Inc., 10 East 39th street, New York, N. Y.; Stockholders: Leslie R. Palmer, 10 East 39th street, New York, N. Y.; J. D. Maley, trustee of the Estate of Charles H. Jones, dead, Daytona, Fla.; J. D. Maley, guardian for Elizabeth, Jocelyn and Kathryn Maley, Daytona, Fla.; Estate of Mrs. M. G. Duck, dead, Decatur, Ga.; Dorothy Martyn Freeman, Bat Cave, N. C. 3. That the known bondholders, mortgagees, and other security holders owning, or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are:—There are none. 4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

LESLIE R. PALMER, Business Manager.

Sworn to and subscribed before me this 29th day of October, 1922.

JESSIE S. NAYLOR,
(My commission expires March 30, 1923.)



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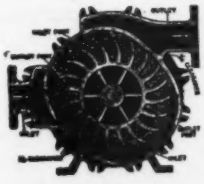
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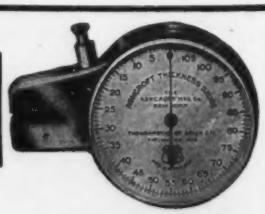

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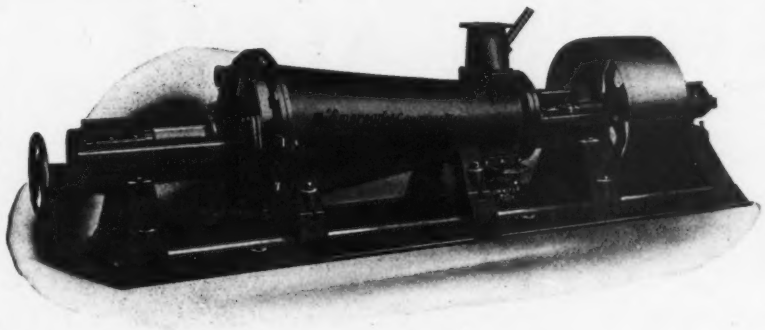

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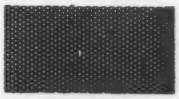

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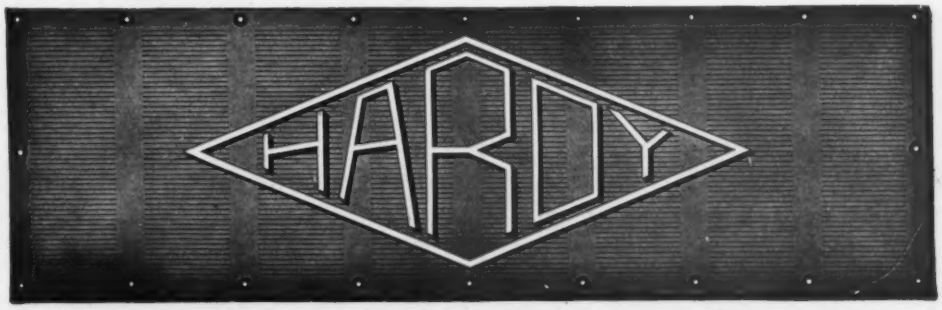

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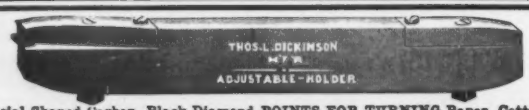

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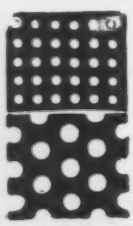

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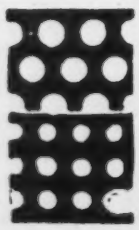

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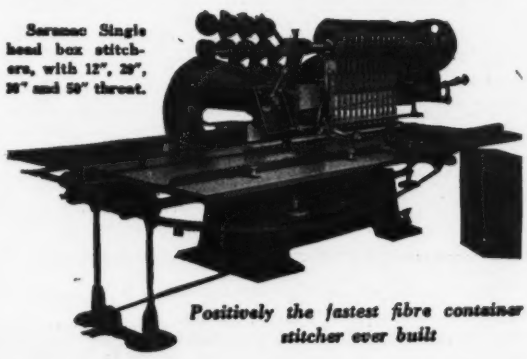

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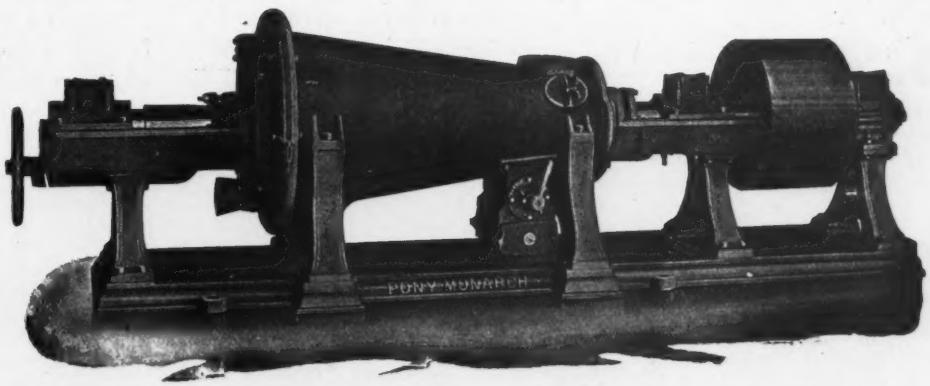

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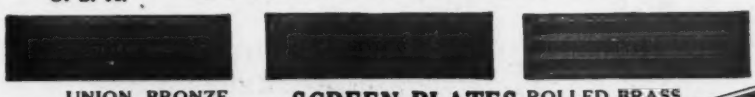

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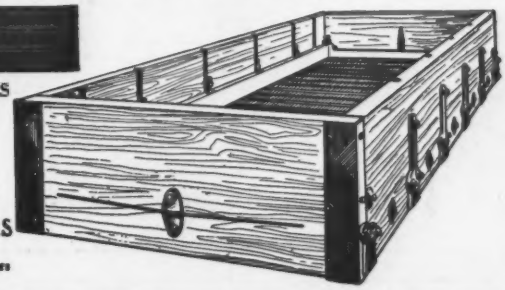

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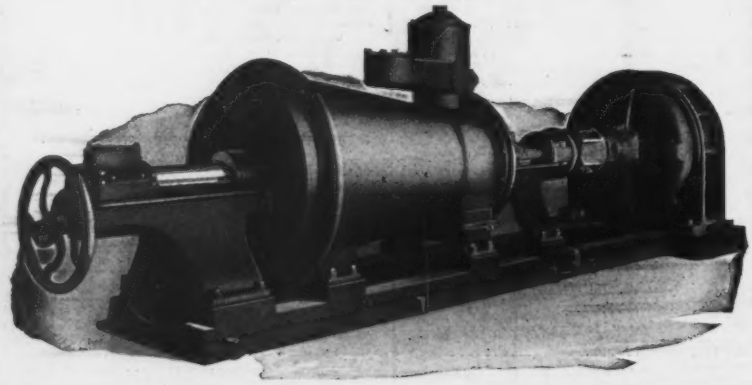

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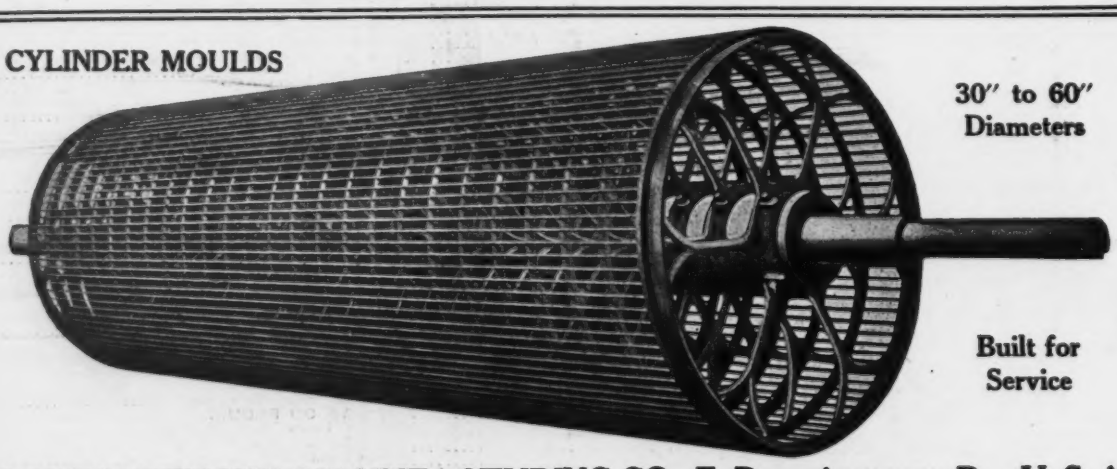

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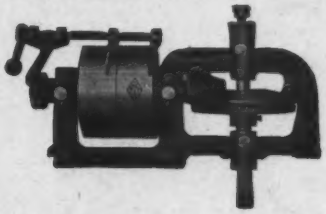

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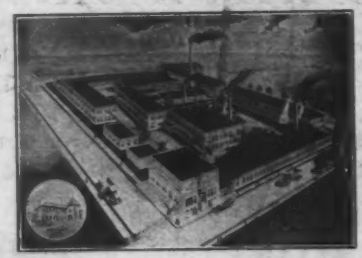

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